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ABSTRACT

This three-part annual report examines the challenges facing Arizona and the nation in the "war on adult illiteracy" and describes the state's responses to the multiple aspects of lifelong learning. Demographic data in Part I point out the basic elements of the challenges in adult education in Arizona. These challenges include cultural lag, the need to know about the status of skills nationwide and in the state and the consequences of their lack in the modern socio-economic world, problems of schooling in the United States, the realities of the problems as made clearer by new assessment procedures in adult education, and challenges to adult education to be responsive to social problems and concerns, such as family income and the dropout rate, socioeconomic implications of illiteracy, the relationship of literacy to welfare, high rates of failure to attain entry-level job skills, and health problems of undereducated individuals and their families. Part II is a brief portrayal of the role of the Arizona Department of Education in meeting these challenges. Data are provided on clientele in instructional and testing programs, adult education programs, courses offered, testing programs for adults, program goals, educational outcomes, student and teacher recruitment, and staff development. Part III makes recommendations based on these challenges and responses and suggests sources for further information. An appendix lists Project Directors and General Educational Development Approved Testing Centers. The document contains 43 tables and 47 figures. (YLB)

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C. Diane Bishop, Superintendent
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ADULT EDUCATION -- LEARNING UNLIMITED

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PHOENIX, ARIZONA
JUNE 1990

FOREWORD

Successes or failures and challenges in education cannot be measured by cold statistics alone. Although they help to amass a stockpile of data, they can never totally reflect human involvement. The 1990 Edition of *Learning Unlimited* captures the challenges facing Arizona and the nation in the "war on adult illiteracy" and describes the state's responses to the multiple aspects of lifelong learning.

Arizona has been involved in adult education since the early 1920's. The state began its compensatory education program for adults in 1945. The General Educational Development (GED) program and testing service is nearly fifty years old. The State Board of Education first authorized and approved a State Plan for adult education in 1965 and Arizona has been providing the programs listed in this publication since that time.

The Arizona legislature allocated its first funding to adult education in 1972 and established, by statute, the Division of Adult Education.

The federal government became a significant partner in the adult basic education initiative in 1964.

C. Diane Bishop, State Superintendent of Public Instruction, established adult literacy as one of five major priorities for Arizona education in December 1987.

The economic and social costs of adult illiteracy in Arizona are high. As a state agency charged with the responsibility of providing public education for children, youth, and adults, we have embarked on an expanded plan to provide adult education services and programs to Arizona citizens in order to sustain a growing and productive economic and living environment.

This annual report focuses a spotlight on the financial and program data concerning five areas of adult education and the GED. It is unique because it is a compilation of state and national information never before contained in one publication. The material was compiled by the state adult education/GED staff as a result of the excellent client data furnished from local service providers.

The publication was developed under the authorship of Dr. James John Jelinek. His dedication and leadership to adult education not only in Arizona but in the nation provides new and meaningful insights and perceptions of adult education. This report is a major contribution to the advancement of an understanding of adult education as it exists in practice, in service to clients, and as a field of study.

Gary Allen Eyre

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PART I

CHALLENGES

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ADULT EDUCATION--LEARNING UNLIMITED

Arizona Department of Education
The Division of Adult Education

PART I. CHALLENGES

Cultural Lag. America is beset with cultural lag. Figuratively it has its technological foot in a spacecraft and its societal foot in an oxcart. What is true of America is also true of Arizona.

At the same time the Hubble Space Telescope now orbiting the earth has two transponders designed and built in Arizona by the Strategic Electronics Division of Motorola, Arizona has 1,621,292 persons 15 years of age and older who, according to business and industry and the National Center on Education and Employment, do not possess the level of basic skills required of individuals to cope in the modern socio-economic world.

The Need to Know. The National Commission on Excellence in Education states that the people of the United States need to know that individuals in our society who do not possess the levels of skill, literacy, and education essential to a new era will be effectively disenfranchised, not simply from material awards that accompany competent performance, but also from the chance to participate fully in our national life. The task at hand is clearly evident:

- *The Status of Basic Skills in America.* There are 194,000,000 persons in America 15 years of age and older, 112,908,000 of whom, according to business and industry and the National Center for Human Resources, do not possess the level of basic skills required of individuals to cope in the modern socio-economic world.

- *The Status of Basic Skills in Arizona.* Of the 2,785,725 persons in Arizona 15 years of age and older, 1,621,292 do not, according to the National Assessment of Educational Progress, possess the basic skills and strategies to meet the expectations of business and industry and are at a disadvantage in coping with the demands of modern living--involving such things as medical directives, financial matters, legal documents, avocational pursuits, recreational activities, civic responsibilities, interpersonal relationships, and the like.

- *The Concept of Higher Order Skills.* Higher order skills include (1) strategies that extend to restructuring ideas presented in specialized texts--scientific materials, literary essays, historical documents, materials found in professional and technical working environments; (2) proficiency in writing by way of elaborated responses that go beyond only essential elements and reflect a greater level of coherence by providing detail to support ideas and principles to accomplish an underlying task; (3) proficiency in solving computational problems that involve moderately complex procedures and reasoning as well as algebra and multi-step problem solving.

- *Higher Order Skills in America.* There are 36,000,000 persons in America ages 15 to 24. Of this number 34,272,000 do not have proficiency in the reading component of higher order skills, 34,200,000 do not have proficiency in the writing component, and 33,696,000 do not have proficiency in the computational component.

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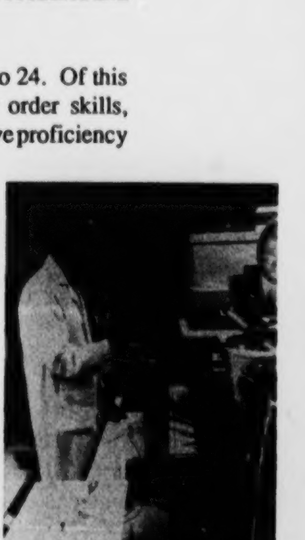

- *Higher Order Skills in Arizona.* There are 891,432 persons in Arizona ages 15 to 29. Of this number 848,643 do not have proficiency in the reading component of higher order skills, 882,517 do not have proficiency in the writing component, and 834,380 do not have proficiency in the computational component.

Problems of Schooling in America. It was with remarkable skill in 1984 that the National Commission on Excellence in Education in its challenging report on *A Nation at Risk* issued its general warning of the dismal consequences likely to occur if problems of schooling in America were to go unsolved.

- *Schooling, Literacy, and Earnings.* According to the Ford Foundation Project on Social Welfare and the American Future, completing high school and having solid basic academic skills have substantive independent effects on the earnings of young adults in the American labor market:

  Three-year cumulative average earnings for male high school graduates are $13,930 higher than the earnings of dropouts who have had 9 or fewer years of schooling, even when both have the same scores on a basic skills test. For female high school graduates the earnings are $2,297 higher than the earnings of the dropouts.

  Three-year cumulative average earnings for male high school graduates are $17,311 higher than the earnings of dropouts who have had 9 or fewer years of schooling when on a basic skills test the graduates score 20 points higher (1 standard deviation from the mean) than the dropouts. For female high school graduates the earnings are $4,937 higher than the earnings of the dropouts.

  Three-year cumulative average earnings for male high school graduates are $20,692 higher than the earnings of dropouts who have had 9 or fewer years of schooling when on a basic skills test the graduates score 40 points higher (2 standard deviations from the mean) than the dropouts. For female high school graduates the earnings are $7,577 higher than the earnings of the dropouts.

Figure 1. Basic Skills: Problem Solving on the Job.

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TABLE 1. THE ESTIMATED INDEPENDENT EFFECTS OF INCREASED BASIC SKILLS OR EDUCATION, ON EARNINGS, DEPENDENCY, OUT-OF-WEDLOCK BIRTHS, AND ARRESTS, IN THE UNITED STATES, 1988.

Skills or Educational Factor	Regression-Estimated Annual Earnings Payoff Dollars	 Percent
One Grade More Attainment	715	.140
High School Diploma	927	.182
Grade-equivalent of Basic Skills	185	.032

Regression-Estimated Effects	Estimated Independent Effect Probability in Percentage Points
Probability of Dependency (18-22)	.0855
One Grade More Attainment	- .0300
Diploma Net of Attainment	- .0070
One Grade Basic Skills Net of Attainment and Diploma	- .0046
Probability of Out-of-Wedlock Birth (18-21)	.0780
One Grade More Attainment	- .0000
Diploma Net of Attainment	- .0420
One Grade Basic Skills Net of Attainment and Diploma	- .0050
Probability of Arrest (Males, 18-21)	.0770
One Grade More Attainment	- .0000
Diploma Net of Attainment	- .0720
One Grade Basic Skills Net of Attainment and Diploma	- .0048

In this table, each factor--completing an additional year of school, obtaining a high school diploma, and testing a grade equivalent higher on a basic skills test--is calculated independently of the others. So, for example, the increase in earnings due to having a diploma does not include the effect of having completed another year of school.

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What effect would better skills and attainment have on young adult employment, earnings, school dropout rates, teenage pregnancy, and welfare dependency? We can estimate the effects of basic skills, independent of other influences by using data from the National Longitudinal Surveys of Youth Labor Market Experience and multivariate statistical techniques to calculate the influence of each factor separately: additional years of attainment, the diploma, and achievement. Our estimates--which include statistical controls for such factors as standard demographic characteristics, health, socio-economic background, geography, and local labor market conditions--suggest that completing an extra year of school at secondary level would add $715 to the mean annual earnings ($5,105) of the sample of young men and women. Obtaining a high school diploma or the general educational development equivalent would increase earnings by an additional $927, an effect equivalent to approximately 18 percent of the mean earnings level. Each additional grade-level equivalent of tested basic skills, as measured by the basic skills test score, would increase annual earnings by $185, or 3.6 percent.

Additional years of schooling, the diploma, and higher academic basic skills tend to reduce significantly the probability of dependency on public assistance, of out-of-wedlock births, and of criminal arrest.

The estimates in this table suggest that if we raise the mean tested basic skills of young adults by one grade equivalent, lifetime earnings increase by .036 percent, and births out of wedlock, welfare dependency, and arrests decline by .065 percent, .053 percent and .062 percent respectively. Even these small changes in tested basic skills increase the states' tax revenues and reduce transfer payments and other social costs associated with crime, dependency, and childbearing out of wedlock. Thus an investment in basic skills that succeeds in raising the average test scores of participants by a grade level is extraordinarily cost effective.

TABLE 2. PERCENTILE RANKINGS OF MEAN SCORES ON EACH OF THE NAEP LITERACY SCALES BY LAST GRADE COMPLETED IN THE UNITED STATES, 1988.

Literacy Scale	0-8 Years	9-11 Years	High School Graduate	Two Years College	BA or BS Degree
Reading	12	14	46	74	80
Prose	14	22	42	72	82
Document	10	20	42	74	83
Computation	13	22	42	71	82

This table clearly shows the strong relationship between the literacy proficiencies of young adults and the years of schooling they have completed.

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TABLE 3. NUMBER OF 18- TO 23-YEAR-OLDS RECEIVING PUBLIC ASSISTANCE BY VENTILE OF THE BASIC SKILLS DISTRIBUTION IN THE UNITED STATES, 1988.

Ventile of the Basic Skills Distribution	Number Receiving Public Assistance	Ventile of the Basic Skills Distribution	Number Receiving Public Assistance
Lowest	257,000 (.1568)	11	49,000 (.0298)
2	180,000 (.1098)	12	48,000 (.0292)
3	160,000 (.0976)	13	50,000 (.0305)
4	150,000 (.0915)	14	30,000 (.0183)
5	125,000 (.0762)	15	75,000 (.0457)
6	125,000 (.0762)	16	45,000 (.0274)
7	90,000 (.0549)	17	20,000 (.0122)
8	60,000 (.0366)	18	15,000 (.0091)
9	50,000 (.0305)	19	20,000 (.0122)
10	80,000 (.0488)	Highest	10,000 (.0061)
		Total	1,639,000 (1.00)

The basic skills distribution is divided into 20 equal parts with ventile 1 representing the bottom 5 percent and ventile 20 representing the top 5 percent of scores.

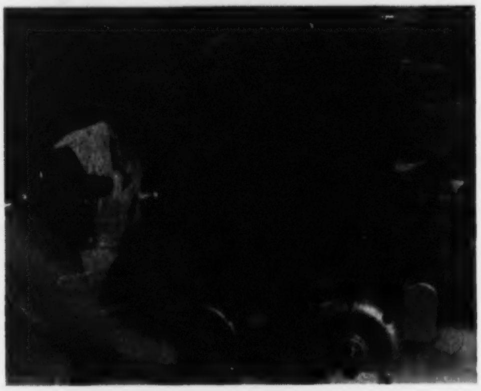

Figure 2. Basic Skills: Literacy Skills on the Shop Floor.

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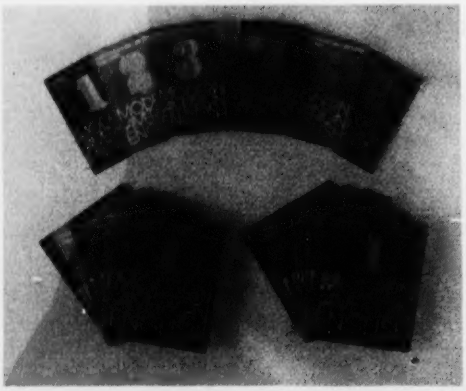

Figure 3. Growth: The Days that Make Us Happy Are the Days that Make Us Wise.

TABLE 4. TOTAL NUMBER OF OUT-OF-WEDLOCK BIRTHS TO WOMEN AGES 19 TO 23 BY VENTILE OF THE BASIC SKILLS DISTRIBUTION IN THE UNITED STATES, 1988.

Ventile of the Basic Skills Distribution	Number of Children Born Out of Wedlock	Ventile of the Basic Skills Distribution	Number of Children Born Out of Wedlock
Lowest	302,000 (.2000)	11	10,000 (.0066)
2	249,000 (.1651)	12	65,000 (.0431)
3	175,000 (.1160)	13	20,000 (.0132)
4	148,000 (.0981)	14	18,000 (.0119)
5	98,000 (.0649)	15	22,000 (.0145)
6	100,000 (.0663)	16	10,000 (.0066)
7	75,000 (.0497)	17	20,000 (.0132)
8	80,000 (.0530)	18	8,000 (.0058)
9	46,000 (.0305)	19	12,000 (.0079)
10	50,000 (.0331)	Highest	none (.0000)
		Total	1,508,000 (1.00)

As skill levels increase, the number of out-of-wedlock births that occur among women in each ventile decreases. Each ventile includes approximately 5 percent of this population.

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TABLE 5. NUMBER OF 18- TO 23-YEAR-OLD HIGH SCHOOL DROPOUTS BY VENTILE OF THE BASIC SKILLS DISTRIBUTION, IN THE UNITED STATES, 1988.

Ventile of the Basic Skills Distribution	Number of High School Dropouts	Ventile of the Basic Skills Distribution	Number of High School Dropouts
Lowest	775,000 (.1804)	11	150,000 (.0349)
2	600,000 (.1396)	12	50,000 (.0116)
3	450,000 (.1047)	13	150,000 (.0349)
4	350,000 (.0814)	14	75,000 (.0174)
5	360,000 (.0838)	15	70,000 (.0162)
6	275,000 (.0640)	16	30,000 (.0069)
7	270,000 (.0628)	17	10,000 (.0023)
8	260,000 (.0605)	18	20,000 (.0046)
9	200,000 (.0465)	19	5,000 (.0011)
10	190,000 (.0442)	Highest	5,000 (.0011)
		Total	4,295,000 (.0349)

Approximately 775,000 of the nation's 33,000,000 18- to 23-year-olds in the bottom ventile (5 percent) of the test score distribution dropped out of school, as compared to 582,000 in ventile 2, and so forth.

Figure 4. Andragogy: The Development of Saleable Skills.

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TABLE 6. BASIC SKILLS TEST SCORE POSITION OF 19- TO 23-YEAR-OLDS BY POVERTY AND SOCIO-ECONOMIC PROBLEM GROUP IN THE UNITED STATES, 1988.

Socio-economic Characteristic	Percent in Lowest Fifth of Basic Skills	Percent in Below-Average Basic Skills
Poor	.46	.77
One or More Socio-economic Problems:	.41	.75
Jobless	.40	.72
Dropout	.52	.85
Welfare Recipient	.53	.79
Unwed Parent	.59	.85
Arrested in Past Year	.37	.68
Mean Percentile Ranking in Basic Skills Distribution		
All 19-23 year olds		.50
Arrested		.32
Jobless		.26
Dependent		.24
Poor		.23
Two Social Problems		.22
Poor Plus One Social Problem		.21
Unwed Parent		.21
Dropout		.20
Poor and Idle		.18
Poor and Dependent		.16
Three or More Social Problems		.15

Of those young adults with special problems--the jobless, dropouts, welfare dependents, or unwed parents--between 40 and 59 percent score in the lowest fifth of the basic skills test. To state it from another perspective, achievement (basic skills) determines attainment (number of years of schooling completed), which then determines employability and earnings, which then influences the likelihood of marrying and bearing children within a two-parent family.

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Challenges through New Assessment Procedures. New assessment procedures in adult education make clearer than ever before the realities of the problems that confront our nation and our state.

One of the main advances in testing technology by the National Assessment of Educational Progress (NAEP) has been the use of the newly developed Item Response Theory (IRT) to produce a Reading Proficiency Scale (RPS) on which levels of reading proficiency can be specified.

- In principle, this scale ranges from 0 to 500, but certain points have been selected and labeled to represent distinct--and interpretable--levels: *Rudimentary* (150), *Basic* (200), *Intermediate* (250), *Adept* (300), *Advanced* (350). These represent –2, –1, 0, +1, and +2 standard deviations from the Mean (M) in the total distribution of scores for the 9-, 13-, and 17-year old samples in the 1988 assessment.

- Criteria for the assessment of competencies in reading based upon the Reading Proficiency Scale include the following:

  Rudimentary Level (150).

  1. Does the person demonstrate rudimentary reading skills and strategies to follow brief, written instructions?

  2. Does the person select words, phrases, or sentences to describe a simple picture?

  3. Does the person interpret simple written clues to identify a common object?

  4. Does the person carry out simple, discrete reading tasks?

  Basic Level (200).

  1. Does the person demonstrate basic comprehension skills and strategies to locate and identify facts from simple, written informational paragraphs, stories, and news articles?

  2. Does the person combine ideas and make inferences based on short uncomplicated written passages?

  3. Does the person read with understanding specific and/or sequentially related information?

  Intermediate Level (250).

  1. Does the person use intermediate skills and strategies to search for', locate, and organize information found in relatively lengthy written passages, and does the person recognize paraphrases of what he/she has read?

  2. Does the person make inferences and reach generalizations about main ideas and the author's purpose from passages dealing with literature, science, and social studies?

  3. Does the person search for specific information, interrelate ideas, and make generalizations while reading?

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Adept Level (300).

1. Does the person demonstrate those adept reading comprehension skills and strategies necessary to understand complicated literary and informational passages, including material about topics studied in curricula of schools?

2. Does the person analyze and integrate less familiar material and provide reactions to and explanations of the text as a whole?

3. Does the person understand, summarize, and explain relatively complicated written information?

Advanced Level (350).

1. Does the person use advanced reading skills and strategies to extend and restructure the ideas presented in specialized and complex texts--scientific materials, literary essays, historical documents, and materials similar to those found in professional and technical working environments?

2. Does the person understand the links between ideas even when those links are not explicitly stated, and does he/she make appropriate generalizations, principles, even when the texts lack clear introductions and/or explanations?

3. Does the person synthesize and learn from specialized reading materials?

- By including some items common to all assessments, the Educational Testing Service was able to make the same scale apply to the samples for ages 9 through 17 and to the young adult sample as well. Thus a young adult who scores 200 can be assumed to have exactly the same level of reading ability as a 9-year-old who makes that score.

- The *Rudimentary level* (150) corresponds approximately to grade 1.5 (that is, the typical child halfway through grade 1 attains this level); *Basic* (200) corresponds approximately to grade 3. 6; *Intermediate* (250) to grade 7.2; *Adept* (300) to the end of grade 12; and *Advanced* (350) to grade 16 (college senior).

- Only individuals with superior reading comprehension ability at higher educational levels would reach 400 or more on the Reading Proficiency Scale.

- From this standpoint, the kinds of reading material that would be understood by persons at selected points on the scale would be approximately as follows:

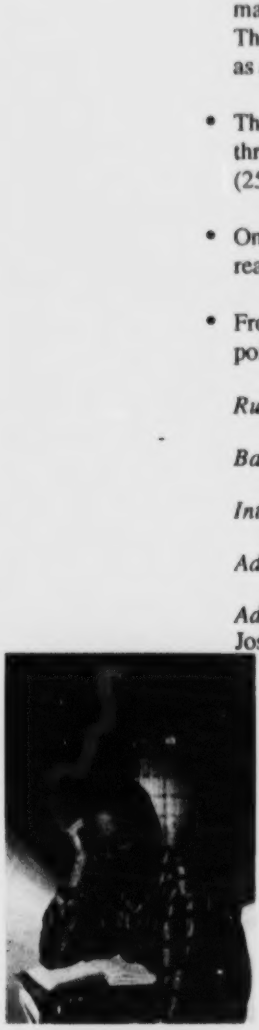
Rudimentary (150): very simple stories in grade 1 basal readers; simple signs.

Basic (200): stories in grade 3 basal readers; simple labels and instructions.

Intermediate (250): simple popular magazines (at approximate level of grade 7).

Adept (300): most newspaper stories; popular novels (at approximate level of grade 11).

Advanced (350): *Time* magazine; editorials in newspapers such as the *New York Times*; novels by Joseph Conrad and Thomas Mann; articles in the *Scientific American*.



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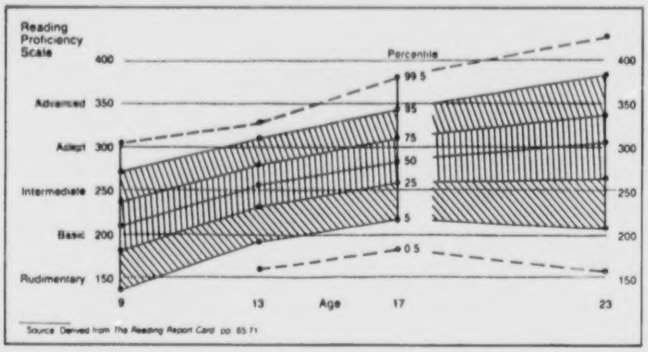
A substantial amount of printed material that the ordinary citizen will confront, at least occasionally, is written at readability levels considerably above the 350 point on the Reading Proficiency Scale--legal documents, tax instructions, and so on.

- There is no single measure or specific point on a scale that separates the "literate" from the "illiterate." The important question facing our society today is not, "How many illiterates are there?" but rather, "What are the nature and levels of literacy demonstrated by various groups in the population?"

The new technology of assessment now makes it possible to determine the *status* and *variability* of reading proficiency for specific populations:

- Figure 5 shows a gradual development of reading skills, from age 9 through age 23. At age 9, the median performance is a little below the Basic level; at age 13, it is a little beyond Intermediate; at age 17, it is almost up to Adept; and at age 23, it is somewhat better than Adept.



Source: Derived from *The Reading Report Card*, pp. 65-71

Figure 5. The Status and Variability of Reading Proficiency in the United States, 1971 to 1988.

- But what is even more striking is the tremendous variability in reading skill at all ages. At age 9, the top 5 percent of children are already reading at a level as high as that of the 25th percentile of the adult population. At age 17, the bottom 5 percent are still reading at levels no better than those attained by 40 percent of the 9-year-olds. Even greater variability is evident in the young adult group, in which the middle 99 percent of the population ranges from just above the Rudimentary level to far beyond the Advanced level, and the middle 50 percent ranges from just above Intermediate to a little below Advanced.

- Reading comprehension ability is, on the average, rather slow to develop. Under the present conditions in the United States, it takes the *average* person about 14 years to progress from a skill level

just above Basic (at age 9) to a level just above Adept (at age 23). But once again the variation is enormous: about 1 percent of 9-year-olds have already reached the Adept level; about 44 percent of young adults have not yet attained that level.

- Still another aspect of the data is striking. For most of those above the median at any age, the rate of development is approximately constant. The levels reached by young adults who are above the 50th percentile are reasonable extrapolations from the levels they achieve at earlier ages. However, as we go below the 50th percentile, progress appears to be increasingly retarded. For example at the 5th percentile, much less progress is made between age 13 and age 17 than between age 9 and age 13. This is true despite the fact that the 17-year-old group does not include dropouts. Young adults at the 5th percentile level are significantly below 17-year-olds at the 5th percentile level; they are only slightly above the level reached by 13-year-olds at the 5th percentile level.

- Table 7 points out that many young adults (17- to 23-year-olds) have proficiency in the lower levels of reading but have a critical lack of reading skills and strategies at the higher levels needed to comprehend the kinds of written materials that are common to business, industry, and higher education.

TABLE 7. PERCENTAGE OF YOUNG ADULTS (AGES 17 TO 23) AT OR ABOVE FIVE READING LEVELS IN THE UNITED STATES, 1988.

Reading Skills	Percentage of Students
Advanced (350). Synthesize and learn from specialized reading materials.	4.8
Adept (300). Find, understand and explain relatively complicated information.	41.8
Intermediate (250). Search for specific information, interrelate ideas, and make generalizations.	86.2
Basic (200). Understand specific and/or sequentially related materials.	98.9
Rudimentary (150). Carry out simple, discrete reading tasks.	100.0

The new technology of assessment now makes it possible to identify *trends* in the reading achievement of various populations:

- Table 8 presents the percentage of students who performed at or above each reading proficiency level in five reading assessments from 1971 to 1988.

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TABLE 8. TRENDS IN LEVELS OF READING ACHIEVEMENT--PERCENTAGE OF STUDENTS AT OR ABOVE THE FIVE LEVELS OF READING PROFICIENCY, IN THE UNITED STATES, 1971 TO 1988.

Reading Skills and Strategies	Age	1971	1975	1980	1984	1988
Rudimentary (Level 150)	9	90.5*	93.2	94.6	92.5	93.0
	13	99.8	99.7	99.9	99.8	99.8
	17	99.6	99.7	99.8	100.0	100.0
Basic (Level 200)	9	58.2*	62.2	67.6*	61.9	62.5
	13	92.8*	93.3*	94.9	94.1	95.1
	17	95.9	96.4	97.2	98.3	98.9
Intermediate (Level 250)	9	15.3	14.6	17.2	17.0	17.0
	13	57.9	58.6	60.9	59.1	58.0
	17	78.5*	80.4*	81.0*	83.1*	86.2
Adept (Level 300)	9	1.0	0.5	0.6	1.0	1.2
	13	9.8	10.3	11.3	10.9	10.6
	17	39.2	39.1	38.5	40.0	41.8
Advanced (Level 350)	9	0.0	0.0	0.0	0.0	0.0
	13	0.1	0.2	0.2	0.2	0.2
	17	6.6*	6.1*	5.3	5.5	4.8

- Across the years, virtually all students have displayed rudimentary reading skills and strategies, characterized by the ability to perform relatively uncomplicated, discrete reading tasks successfully. At the other extreme, very few students in any assessment have reached the highest level of reading proficiency defined, reflecting their difficulty in comprehending passages that are more lengthy and complex or that deal with specialized subject matter.

- Virtually no 9- or 13-year-olds and only 4.8 percent of young adults are at the Advanced (350) level of reading proficiency. The percentage of young adults at this level of performance has declined significantly since 1971. Most young adults lack the reading skills and strategies needed to comprehend the kinds of written materials that are prevalent in business, industry and higher education.

- Table 9 summarizes the change from 1971 to 1988 in the percentage of students in each age group who reached each level of reading proficiency.

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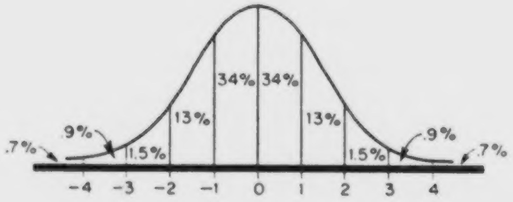
TABLE 9. CHANGE IN THE PERCENTAGE OF STUDENTS REACHING LEVELS OF READING PROFICIENCY, IN THE UNITED STATES, 1971 TO 1988.*

Level	Age 9	Age 13	Age 17
Rudimentary (150)	+2.5*	0.0	+0.4
Basic (200)	+4.3*	+2.3*	+3.0
Intermediate (250)	+1.7	+0.1	+7.7*
Adept (300)	+0.2	+0.8	+2.6
Advanced (350)	0.0	+0.1	–1.8*

* Shows statistically significant difference between years, where the standard deviation is 0.5. The "+" symbol denotes a gain in the percentage of students reaching a certain level of proficiency in 1988, while the "–" symbol denotes a loss.

To find the amount by which each score deviates from some measure of central position is a way of estimating the total amount of dispersion.

When all the deviations are squared and the mean of these squares is taken, the result is called the *variance*. The variance is a measure of variation, but it is a square rather than a linear measure. The square root of the variance is called the *standard deviation*. The standard deviation is a standard with which deviations of individual scores may be compared.



The standard deviation is a kind of average of all the deviations in the distribution, being the square root of the mean of the squared deviations.

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TABLE 10. MEANS AND STANDARD ERRORS FOR SCORES ON GENERAL READING PROFICIENCY OF YOUNG ADULTS, IN THE UNITED STATES, 1971 TO 1988.**

	1971	1975	1980	1984	1988
Total	285.4 (1.2)*	286.1 (0.8)*	285.8 (1.4)	288.8 (0.9)	290.1 (1.1)
Sex					
Male	279.0 (1.2)*	280.1 (0.9)*	282.1 (1.4)	283.8 (0.9)	286.0 (1.5)
Female	291.5 (1.3)	291.8 (0.9)	289.9 (1.1)	293.9 (1.1)	293.8 (1.6)
Ethnicity/Race					
White	291.4 (1.0)	293.0 (0.6)	293.1 (1.2)	295.0 (0.7)	294.7 (1.3)
Black	238.6 (1.7)*	240.4 (1.9)*	242.5 (2.0)*	264.2 (1.2)*	274.4 (2.6)
Hispanic	-------------	252.2 (3.6)*	260.7 (3.3)	268.1 (1.9)	270.8 (4.0)
Region					
Northeast	292.2 (2.5)	289.5 (1.7)	285.4 (2.4)*	292.0 (2.1)	294.8 (2.5)
Southeast	270.8 (2.5)*	277.3 (1.4)*	281.0 (2.6)	284.6 (2.3)	285.5 (2.1)
Central	290.8 (2.1)	291.9 (1.5)	288.6 (3.2)	290.1 (1.5)	291.2 (1.8)
West	283.7 (1.7)	282.3 (1.8)	286.6 (1.7)	289.1 (1.6)	289.0 (2.2)
Parental Education					
Not Graduated High School	261.6 (1.5)	263.3 (1.4)	261.9 (1.7)	269.3 (1.4)	267.4 (2.4)
Graduated High School	283.3 (1.2)	281.7 (1.0)	277.4 (1.1)	281.1 (1.0)	282.0 (1.5)
Post High School	302.3 (1.0)	300.9 (0.7)	299.3 (1.2)	301.2 (0.8)	299.5 (1.3)
Reading Materials in Home					
0-2 Items	246.2 (1.8)*	251.7 (2.1)*	257.6 (2.2)*	264.1 (1.4)	268.8 (2.4)
3 Items	273.9 (1.4)*	275.8 (1.1)*	278.5 (1.8)*	283.0 (1.1)	287.1 (1.7)
4 Items	295.6 (1.0)	296.1 (0.6)	295.6 (1.1)	296.3 (0.8)	295.8 (1.2)
Television Watched Per Day					
0-2 Hours	-----------	-----------	291.0 (1.3)	297.4 (0.9)	295.6 (1.2)
3-5 Hours	-----------	-----------	277.1 (1.3)*	284.5 (0.9)	285.4 (1.8)
6 Hours or More	-----------	-----------	257.7 (2.9)	267.8 (1.4)	268.6 (4.1)

** Young Adults -- Ages 17 to 23.

* Standard Error -- .05 per set of comparisons within a reporting category (e.g., 1988 versus each prior assessment). Thus the Standard Error is .0125 for each comparison. Jackknifed standard errors are presented in parentheses.

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TABLE 11. MEANS, STANDARD DEVIATIONS, AND PERCENTILE DISTRIBUTIONS FOR SCORES ON READING PROFICIENCY OF YOUNG ADULTS, IN THE UNITED STATES, 1971 TO 1988.*

	1971	1975	1980	1984	1988
Total					
Mean	285.4 (1.2)	286.1 (0.8)	285.8 (1.4)	288.8 (0.9)	290.1 (0.9)
Standard Deviation	45.7 (0.5)	43.9 (0.5)	41.9 (0.6)	40.3 (0.3)	37.1 (0.7)
Percentiles					
5	207.7 (2.3)	211.1 (2.0)	213.7 (2.1)	220.8 (1.3)	226.2 (1.3)
10	226.4 (1.7)	229.5 (1.7)	231.1 (2.2)	236.6 (0.9)	241.5 (2.4)
25	265.5 (1.6)	258.6 (1.0)	259.2 (1.3)	262.7 (1.1)	265.8 (1.8)
50	288.1 (1.3)	288.3 (0.7)	288.0 (1.4)	290.4 (.09)	291.1 (1.8)
75	316.9 (1.0)	316.1 (0.7)	315.1 (1.2)	316.8 (0.9)	316.0 (1.4)
90	341.9 (1.1)	340.2 (0.8)	337.8 (1.4)	339.6 (0.7)	336.9 (2.1)
95	356.6 (1.5)	354.4 (0.8)	351.1 (1.5)	352.6 (1.0)	348.7 (1.7)
Male					
Mean	279.0 (1.2)	280.1 (0.9)	282.1 (1.4)	283.8 (0.9)	286.0 (1.5)
Standard Deviation	46.2 (0.6)	44.9 (0.6)	42.8 (0.6)	40.9 (0.4)	37.5 (1.1)
Percentiles					
5	198.7 (1.8)	202.2 (1.3)	207.3 (2.5)	215.0 (1.4)	222.0 (2.6)
10	218.6 (1.9)	221.3 (1.7)	225.6 (2.2)	230.5 (1.2)	236.3 (3.6)
25	249.5 (1.3)	251.3 (1.0)	254.7 (1.5)	257.2 (1.2)	261.6 (1.7)
50	281.8 (1.4)	282.1 (1.2)	284.7 (1.4)	285.5 (0.8)	287.0 (2.2)
75	310.9 (1.2)	310.9 (1.0)	312.3 (1.3)	312.3 (1.0)	312.0 (3.4)
90	336.0 (2.0)	336.0 (1.4)	335.3 (1.3)	335.3 (1.1)	333.4 (2.0)
95	350.8 (1.8)	354.4 (1.1)	348.5 (1.4)	348.8 (1.5)	345.6 (4.1)
Female					
Mean	291.5 (1.3)	291.8 (0.9)	289.5 (1.4)	293.9 (1.1)	293.8 (1.6)
Standard Deviation	44.4 (0.6)	42.1 (0.2)	40.8 (0.8)	39.0 (0.4)	36.3 (0.9)
Percentiles					
5	215.6 (1.9)	219.7 (2.0)	219.2 (2.4)	228.0 (1.5)	231.8 (3.3)
10	233.9 (1.4)	237.4 (2.1)	236.8 (1.6)	243.2 (1.1)	246.6 (4.9)
25	263.1 (1.6)	265.4 (1.5)	263.2 (1.9)	268.7 (1.4)	270.2 (2.0)
50	293.9 (1.2)	293.8 (0.9)	291.2 (1.7)	295.3 (1.0)	294.6 (2.2)
75	321.9 (1.3)	320.0 (0.7)	317.5 (1.5)	321.0 (0.9)	319.4 (1.5)
90	346.4 (1.5)	343.6 (0.9)	340.3 (1.9)	343.2 (0.9)	339.8 (1.7)
95	360.9 (1.1)	357.1 (1.3)	353.6 (2.2)	355.5 (1.2)	351.7 (2.7)

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TABLE 11. (CONTINUED).

	1971	1975	1980	1984	1988
White					
Mean	291.4 (1.0)	293.0 (0.6)	293.1 (1.2)	295.6 (0.7)	294.7 (1.3)
Standard Deviation	42.4 (0.4)	39.8 (0.3)	37.9 (0.4)	38.2 (0.3)	36.0 (0.7)
Percentiles					
5	220.7 (1.8)	226.8 (1.4)	229.3 (1.8)	230.7 (1.2)	232.7 (1.0)
10	237.2 (1.0)	242.2 (0.9)	244.2 (1.8)	246.1 (0.8)	247.4 (3.8)
25	264.3 (1.3)	267.2 (0.8)	268.2 (1.2)	270.9 (1.2)	271.4 (1.7)
50	293.1 (1.1)	294.1 (0.8)	294.2 (1.2)	296.8 (1.1)	295.4 (1.6)
75	320.1 (1.1)	320.0 (0.6)	319.2 (1.2)	321.7 (0.8)	319.9 (1.9)
90	344.6 (1.0)	343.3 (0.6)	340.9 (1.9)	343.2 (0.8)	339.8 (1.5)
95	358.9 (1.4)	357.0 (1.1)	353.8 (1.8)	355.8 (0.9)	351.6 (2.9)
Black					
Mean	238.6 (1.7)	240.4 (1.9)	242.5 (2.0)	264.2 (1.2)	274.4 (2.6)
Standard Deviation	43.6 (0.7)	43.8 (1.1)	42.2 (1.3)	37.0 (0.8)	35.9 (1.3)
Percentiles					
5	164.6 (4.2)	164.9 (3.2)	175.0 (3.0)	201.9 (3.9)	214.5 (9.5)
10	181.8 (3.3)	182.4 (5.0)	189.8 (5.0)	216.1 (1.9)	227.8 (4.2)
25	210.1 (2.2)	211.8 (2.2)	216.0 (2.9)	239.0 (1.3)	250.5 (2.3)
50	239.2 (1.7)	241.6 (2.1)	243.3 (2.9)	264.2 (1.2)	274.3 (3.5)
75	268.1 (1.4)	271.4 (1.6)	270.0 (2.2)	288.4 (1.6)	299.6 (3.0)
90	294.2 (2.4)	295.7 (1.4)	294.0 (1.7)	310.5 (1.9)	321.0 (3.8)
95	309.9 (2.1)	308.4 (2.7)	307.2 (2.4)	323.6 (3.3)	333.1 (4.8)
Hispanic					
Mean	-------------	252.2 (3.6)	260.7 (3.3)	268.1 (1.9)	270.8 (4.0)
Standard Deviation	-------------	41.8 (2.1)	40.0 (1.4)	39.7 (1.4)	37.7 (2.0)
Percentiles					
5	------------	184.3 (4.3)	193.4 (8.4)	201.6 (2.3)	204.2 (11.5)
10	------------	197.3 (5.1)	207.5 (3.3)	216.6 (2.8)	218.0 (6.9)
25	------------	225.2 (5.3)	234.8 (5.1)	241.5 (2.6)	246.4 (5.5)
50	------------	252.5 (4.4)	261.7 (3.7)	268.6 (3.1)	273.6 (5.0)
75	------------	279.2 (3.9)	287.9 (3.5)	296.4 (3.8)	297.9 (7.0)
90	------------	306.4 (5.6)	311.6 (3.8)	318.3 (6.1)	315.9 (18.0)
95	------------	320.3 (8.2)	324.5 (1.8)	332.3 (7.6)	328.0 (8.6)

*Jackknifed standard errors are presented in parentheses.

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TABLE 12. BASIC SKILLS TEST SCORES BY VENTILE FOR ALL 19- TO 23-YEAR-OLDS IN THE UNITED STATES, 1988.

Ventile	Basic Skills Test Scores	Ventile	Basic Skills Test Scores
Lowest	0.0-32.5	11	78.5-80.5
2	33.0-41.5	12	81.0-82.5
3	42.0-49.0	13	83.0-85.0
4	49.5-54.5	14	85.5-87.5
5	55.0-60.0	15	88.0-90.0
6	60.5-64.5	16	90.5-92.5
7	65.0-68.0	17	93.0-95.0
8	68.5-71.5	18	95.5-97.0
9	72.0-75.0	19	97.5-100.0
10	75.5-78.0	Highest	100.5 and over

The distribution is divided into 20 equal parts with ventile 1 representing the bottom 5 percent and ventile 20 representing the top 5 percent.

Figure 6. Lifelong Learning: The Discovery and Development of Talents.

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In addition to the new procedures for assessing skills and strategies in reading, there are now available in adult education new procedures for assessing skills and strategies in *writing*.

- Writing occurs regularly in personal and social situations. Individuals write to accomplish many different purposes, such as straightening out a billing error by letter, explaining a personal viewpoint on an issue, or expressing an artistic impulse in a story or poem.
- The ability to explain ideas or document events in writing can also help in a variety of job situations. Letters, reports, inventories, and a wide range of record-keeping systems are integral to many businesses.
- In its assessment of writing skills the National Assessment of Educational Progress identifies three purposes of writing:

  1. Informative Writing. Informative writing is used to share knowledge and convey messages, instructions, and ideas.

  2. Persuasive Writing. The primary aim of persuasive writing is to influence others to bring about some action or change.

  3. Personal/Imaginative Narrative Writing. Personal/imaginative narrative writing contributes to an awareness of the world as the writer creates, manipulates, and interprets reality. Such writing, whether fact or fancy, requires close observation of people, objects, and places, while it enables exploration of all the wide range of possibilities in human experience.

- One of the advances in testing technology has been the use of a Primary Trait Scoring (PTS) guide developed for each writing task to focus raters' attention on how successfully students' responses accomplish the task set forth in the prompt.

TABLE 13. PERCENTAGE OF YOUNG ADULTS (AGES 17 TO 23) IN THE UNITED STATES AT EACH LEVEL OF TASK ACCOMPLISHMENT IN INFORMATIVE WRITING, 1988.

Task	Not Rated	Unsatisfactory	Minimal	Adequate	Elaborated
Reporting from Personal Experience: Job Application	1.3	12.8	17.5	64.4	4.1
Reporting from Given Information	0.8	8.9	37.0	52.0	1.3
Analytic Writing from Given Information	1.5	8.7	75.7	13.7	0.5

Criteria for Primary Trait Scoring are as follows:

"Elaborated" Level (Score of 4).

Does the person provide elaborated responses beyond the essential, reflecting a higher level of coherence and providing more detail to support the points he/she has made?

"Adequate" Level (Score of 3).

Does the person provide adequate responses that include the information and ideas necessary to accomplish the underlying task, and does the person provide information and ideas likely to be effective in achieving the desired purpose?

"Minimal" Level (Score of 2).

Does the person recognize some or all of the elements needed to complete a task but does not manage those elements well enough to assure that the purpose of the task will be achieved?

"Unsatisfactory" Level (Score of 1).

Does the person write very abbreviated, circular, or disjointed responses that do not even begin to address the writing task?

"Not Rated" Level (Score of 0).

Does the person make responses that are blank, indecipherable or completely off task, or does he/she make responses to the effect that he/she does not know how to do the task?

- Another perspective on assessing students' writing involves holistic scoring for overall fluency--a global view of the ideas, language facility, organization, mechanics, and syntax of each paper taken as a whole and rated on a six-point scale.
- Because student papers are evaluated relative to one another in holistic scoring--rather than against specific criteria, as with Primary Trait Scoring--the distribution of scores is approximately normal, with scores evenly distributed around the center of the scale.
- Correlations of holistic and primary trait scoring range from .38 to .66, thus the two scoring measures are clearly related.
- While the two scoring measures are clearly related, it is evident that they identify somewhat different aspects of writing performance.
- The primary trait score is closely tied to the features of specific writing tasks, providing a measure of the person's success in accomplishing the assigned purpose of the writing.

- Alternatively, the holistic score provides a general measure of writing fluency--attention to organization, adherence to the conventions of written English, word choice, handwriting, and quality of ideas.

Of five informative writing tasks--one a report from personal experience, another from given information, and one a required analysis of given information--the percentage of young adults at each level of task accomplishment in 1988 is shown in Table 13.

Figure 7. A Basic Goal of Adult Education: Worthy Home Membership.

TABLE 14. PERCENTAGE OF YOUNG ADULTS (AGES 17 TO 23) IN THE UNITED STATES IN FLUENCY OF INFORMATIVE WRITING AS ASSESSED THROUGH HOLISTIC SCORING, 1988.*

Holistic Score	Percentage of Students
6	6.1
5	16.4
4	30.8
3	29.7
2	21.5
1	5.5
0	2.7

*Mean -- 3.51. Percent Rated 4, 5, or 6 -- 53.5.

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TABLE 15. PERCENTAGE OF YOUNG ADULTS (AGES 17 TO 23) IN THE UNITED STATES AT EACH LEVEL OF TASK ACCOMPLISHMENT IN PERSUASIVE WRITING, 1988.

Persuasive Task	Not Rated	Unsatis-factory	Minimal	Adequate	Elaborated
Convincing Others	2.9	29.3	47.3	19.7	0.8
Refuting an Opposing Position	0.9	29.7	48.1	21.0	0.3

TABLE 16. PERCENTAGE OF YOUNG ADULTS (AGES 17 TO 23) IN THE UNITED STATES IN FLUENCY OF PERSUASIVE WRITING AS ASSESSED THROUGH HOLISTIC SCORING, 1988. *

Holistic Score	Percentage of Students
6	5.2
5	14.4
4	33.3
3	29.2
2	10.3
1	3.8
0	3.9

*Mean--3.60. Percent rated 4, 5, or 6--59.3.

- Research on the percentage of young adults (ages 17 to 23) at each level of task accomplishment in imaginative writing, 1988, has not been completed, nor has research on the percentage of young adults in fluency of imaginative writing as assessed through holistic scoring, 1988.

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Figure 8. Andragogy: Lifelong Learning.

TABLE 17. LEVELS OF UNITED STATES HISTORY PROFICIENCY OF YOUNG ADULTS (AGES 17 TO 23) IN AMERICA, 1988.*

Proficiency Levels	Percentage of Persons at or Above Each Level
Level 200 Knows Simple Historical Facts	99.4 (0.1)
Level 250 Knows Beginning Historical Information and Has Rudimentary Interpretive Skills	88.9 (0.1)
Level 300 Understands Basic Historical Terms and Relationships	45.9 (1.3)
Level 350 Interprets Historical Information and Ideas	4.6 (0.5)

* Standard errors are presented in parentheses.

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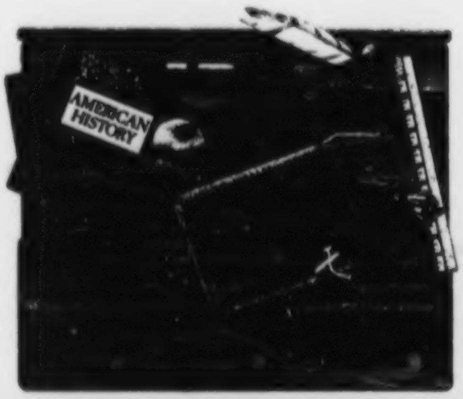

TABLE 18. LEVELS OF CIVICS PROFICIENCY OF YOUNG ADULTS (AGES 17 TO 23) IN AMERICA, 1988.*

Proficiency Levels	Percentage of Persons at or Above Each Level
Level 200 Recognizes the Existence of Civic Life	98.8 (0.2)
Level 250 Understands the Nature of Political Institutions and the Relationship Between Citizen and Government	89.2 (0.7)
Level 300 Understands Specific Government Structures and Functions	49.0 (1.1)
Level 350 Understands a Variety of Political Institutions and Processes	6.0 (0.5)

* Standard errors are presented in parentheses.

Figure 9. Women in the Workforce: Knowledge Is Power.

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Figure 10. A Book Is a Springboard to Thought and Action.

TABLE 19. MEANS OF SCIENCE PROFICIENCY SCORES OF YOUNG ADULTS (AGES 17 TO 23) IN CERTAIN COUNTRIES OF THE WORLD, 1988.*#

Country	Total	Male	Female
British Columbia	551.3 (2.1)	562.3 (3.2)	541.6 (2.3)
Ireland	469.3 (3.5)	480.4 (5.2)	456.5 (3.8)
Korea	549.9 (2.9)	567.5 (3.6)	530.6 (4.1)
New Brunswick (English)	510.5 (2.7)	517.2 (4.0)	502.3 (4.1)
New Brunswick (French)	468.1 (3.9)	477.4 (5.0)	460.2 (4.3)
Ontario (English)	514.7 (2.7)	524.3 (3.8)	504.7 (3.0)
Ontario (French)	468.3 (2.2)	474.9 (3.1)	463.1 (2.7)
Quebec (English)	515.3 (2.8)	525.4 (3.8)	505.7 (3.1)
Quebec (French)	513.4 (3.3)	523.7 (4.1)	502.1 (3.6)
Spain	503.9 (4.3)	518.0 (4.8)	489.5 (5.0)
United Kingdom	519.5 (3.7)	524.7 (5.3)	514.9 (3.3)
United States	478.5 (4.8)	481.9 (6.1)	474.9 (4.7)

* Standard errors are presented in parentheses.

# Levels of Science Proficiency are as follows:

300. Know everyday science facts.
400. Understand and apply simple scientific principles.
500. Use scientific procedures and analyze scientific data.
600. Understand and apply intermediate knowledge and principles.
700. Integrate scientific information and experimental evidence.

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Figure 11. Functional Literacy: Reading, Writing, and Computing in the Workplace.

TABLE 20. MEANS OF MATHEMATICS PROFICIENCY SCORES OF YOUNG ADULTS (AGES 17 TO 23) IN CERTAIN COUNTRIES OF THE WORLD, 1988. * #

Country	Total	Male	Female
British Columbia	539.8 (2.2)	539.6 (2.8)	541.3 (2.6)
Ireland	504.3 (3.7)	508.2 (5.7)	499.6 (3.4)
Korea	567.8 (2.7)	576.7 (3.4)	558.0 (3.9)
New Brunswick (English)	529.0 (2.8)	526.6 (4.3)	529.0 (3.4)
New Brunswick (French)	514.2 (3.3)	516.8 (4.2)	513.4 (3.6)
Ontario (English)	516.1 (3.1)	517.8 (4.4)	514.6 (3.3)
Ontario (French)	481.5 (2.7)	400.6 (3.4)	462.7 (3.0)
Quebec (English)	535.8 (2.0)	534.1 (3.0)	537.3 (2.3)
Quebec (French)	543.0 (3.1)	546.3 (4.2)	539.3 (3.0)
Spain	511.7 (4.6)	523.2 (5.3)	499.9 (5.0)
United Kingdom	509.9 (3.5)	507.0 (5.0)	512.5 (3.9)
United States	473.9 (4.5)	474.6 (6.4)	473.2 (5.1)

* Standard errors are presented in parentheses.
# Levels of Mathematics Proficiency are as follows:

300. Perform simple addition and subtraction.
400. Use basic operations to solve simple problems.
500. Use intermediate level mathematics skills to solve two-step problems.
600. Understand measurement and geometry concepts and solve more complex problems.
700. Understand and apply more advanced mathematical concepts.

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TABLE 21. TRENDS IN PERCENTAGES OF YOUNG ADULTS (AGES 17 TO 23) AT OR ABOVE FIVE LEVELS OF MATHEMATICS PROFICIENCY IN AMERICA, 1978 TO 1986.

Proficiency Levels	1978	1982	1986
Level 150 Simple Arithmetic Facts	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)
Level 200 Beginning Skills and Understanding	99.8 (0.0)	99.9 (0.1)	99.9 (0.1)
Level 250 Basic Operations and Beginning Problem Solving	92.1 (0.5)*	92.9 (0.5)*	96.0 (0.4)
Level 300 Moderately Complex Procedures and Reasoning	51.4 (1.1)	48.3 (1.2)	51.1 (1.2)
Level 350 Multi-step Problem Solving and Algebra	7.4 (0.4)	5.4 (0.4)	6.4 (0.4)

* Statistically significant difference from 1986 at the .05 level. Jackknifed standard errors are presented in parentheses.

Figure 12. Employment Application: The Point of No Return in Literacy.

Challenges by Way of Social Concerns in America. Within recent decades state-wide and nation-wide legislation has made adult education increasingly more responsive to problems such as the following:

- *Family Income and the Dropout Rate.* About 60 percent of all high school dropouts come from families with incomes of less than $15,000, while only 16 percent come from families with incomes of $30,000 or more.
- *Ethnicity and Dropouts.* One minority student drops out of high school for every two who graduate, compared with one white dropout for every five who graduate.
- *"Dropouts In and Out of School."* Of the 3,800,000 18-year-old Americans in 1988, fully 700,000 dropped out of school and another 700,000 could not read their high school diplomas.
- *Poverty, Ethnicity, and Schooling.* Of those who live below the poverty level, 37 percent are black high school dropouts, 16 percent are white dropouts, 22 percent are black graduates, and 8 percent are white graduates.

Figure 13. Synergy: The Sharing of Ideas.

- *Supply and Demand in the Job Market.* While the nation's employers are requiring more and more education, job applicants are becoming less and less literate.
- *An International Perspective on Schooling.* The rate of illiteracy in the United States is three times that of the Soviet Union and five times that of Cuba.

An international study of young adults ranks American students last in mathematics proficiency and South Korean students first.

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Among 156 countries the United States ranks 49th in literacy (a drop of 18 places since 1950).

One of every four American youths drops out of school before entering the workforce. By contrast 96 percent of all Japanese youths arrive at their first job with a high school diploma in hand.

In standardized tests between 1983 and 1986 American high school seniors came in last in biology among students from 13 countries, including Hungary and Singapore. They were eleventh in chemistry and ninth in physics.

- *Writing Proficiency of Young Adults.* At a time when European leaders are seriously considering requiring all secondary school students to learn three languages, only 14 percent of young adults (21 years of age) in America can write an analytic piece in English.

TABLE 22. REASONS FOR LEAVING ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Reason for Leaving the Program	Number of Adult Students	Percentage
Completed Personal Objectives	24,929	78.6
Health Problems	910	3.0
Day Care Problems	392	1.2
Transportation Problems	894	2.8
Family Problems	856	2.7
Class Location	401	1.3
Lack of Interest	1,294	4.1
Time Class is Scheduled	1,682	5.3
Moved from Area	349	1.0
Total	31,707	100.0

- *Entry-level Job Skills.* In all, 84 percent of the 23,000 individuals who took an examination in 1988 for entry-level jobs at New York Telephone failed.

On the average 40 percent of the job applicants at Motorola fail an entry-level examination requiring seventh-to-ninth grade English and fifth-to-seventh grade mathematics.

- *Socio-economic Implications of Illiteracy.* According to the Educational Testing Service, 1,250,000 young Americans cannot read at the fourth-grade level.

Another 6,000,000 are not literate enough to write a letter to a store about a billing error, or are not skilled enough in simple mathematics to balance a checkbook.

TABLE 23. HOUSEHOLD INCOME OF STUDENTS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Income	Students	Percent
0- 6,000	14,433	45.5
6,001- 8,000	5,776	18.2
8,001-12,000	5,620	17.7
12,001-16,000	2,903	9.3
16,001-20,000	1,469	4.6
Over 20,001	1,506	4.7
Total	31,707	100.0

- *The Economics of Illiteracy.* The nation's economic losses because of illiteracy are $225,000,000,000 in industrial accidents, prison costs, public assistance, and lost productivity.

  The result is that illiteracy makes the nation less able to compete efficiently and effectively on the world market.

  Each year IBM spends $1,500,000,000 on training costs as compared with Harvard University that spends one-half that amount for its entire operation.

- *Welfare and Schooling.* Individuals with fewer than six years of schooling are four times more likely to wind up on welfare than those with at least nine years of schooling.

- *The Relationship of Literacy to Welfare.* Of all the mothers on Aid to Families with Dependent Children (AFDC) one of three cannot read.

- *The Quest for Literate Workers.* Businesses are increasingly unable to find employees who can adequately perform the routine reading, writing, and computing called for in their jobs.

- *Literacy in the Workplace.* Ninety-nine percent of all workers perform some reading-related work each day; to keep pace they need to read on the job an average of 113 minutes each day.

- *A Socio-economic Problem.* The Project on Adult Literacy sponsored by the Southport Institute in Connecticut estimates that 30 million Americans lack so many basic skills they cannot read, write, calculate, solve problems, or communicate well enough to function effectively on the job or in their everyday lives.

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TABLE 24. ENROLLMENT BY ETHNIC BACKGROUND OF STUDENTS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Program	American Indian	Asian	Afro-American	Hispanic	Anglo	Total
ABE I (1-4)	41	115	96	625	440	1,317
ABE II (5-8)	281	191	463	2,206	2,132	5,273
G.E.D.	422	123	438	2,243	3,602	6,828
E.S.O.L.	18	1,307	62	15,558	511	17,456
Citizenship	--	47	3	771	12	833
Total	762	1,783	1,062	21,403	6,697	31,707
Percent	2.4	5.6	3.3	67.5	21.1	100.0

United States Citizen. Yes--12,366. 39 percent. No--19,312. 61 percent.

- *Minorities and Illiteracy.* By the year 2000, minorities will make up a majority of the school age population in the nation, but illiteracy among minority students is as high as 40 percent.

- *Ethnicity and Basic Skills.* The Educational Testing Service states that while eight of every ten young adults pass their letter-writing and checkbook-balancing tests, only four of every ten blacks and six of every ten Latinos are able to do so.

- *Illiteracy in the Armed Services.* Thirty percent of all naval recruits are functionally illiterate.

  Twenty-five percent of all army recruits are placed in remedial classes to learn how to comprehend training manuals written at a seventh grade level.

- *Juvenile Delinquency and Illiteracy.* Eighty-five percent of all juvenile offenders are illiterate.

- *Unemployment and Communication Skills.* Seventy-five percent of all unemployed persons have inadequate reading and writing skills.

- *Adults without Schooling.* Nearly 3,000,000 adults in America have never attended school.

- *Availability of Adult Literacy Programs.* Adult literacy programs in America reach only four percent of the illiterate persons in the nation.

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- *The Inadequacy of School Reforms.* Southport Institute points out that the school reforms presently being demanded will not solve the problem of illiteracy for the reason that the 30,000,000 adults with inadequate skills are already out of school.

- *The Untestable in Literacy Education.* The Educational Testing Service concludes that 440,000 young Americans--or about two percent of the 21,000,000 individuals in the 21- to 25-year-old age bracket --cannot read well enough even to be tested.

  About 225,000 of these young Americans are Spanish-speaking.

- *The Literacy of Automobile Drivers.* Twenty-five million automobile drivers in the United States are functionally illiterate. Their driver's license examinations are administered to them orally.

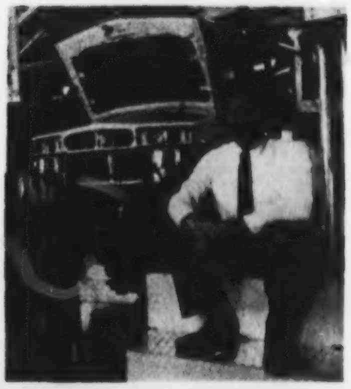
- *The Lost Art of Reading Books.* One hundred million Americans have never read a book.

- *Jobs and Continuing Education for Adults.* Businesses concentrate mainly on workers who already have some kind of job, leaving virtually untouched the growing--and far more worrisome--problem of illiterate youths who are not yet employed and increasingly have little prospect of finding a job today.

- *The Assessment of Literacy Programs for Adults.* The Project on Adult Literacy states there is a dearth of serious evaluations of current literacy programs.

TABLE 25. PREVIOUS YEARS OF SCHOOLING OF STUDENTS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Years	Adult Students	Percent
0-0	18,847	59.5
1-4	921	2.9
5-8	2,328	7.3
9-11	8,291	26.2
12+	1,320	4.1
Total	31,707	100.0



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- *Undereducated Teenage Mothers and Poverty.* Today one of six babies in the United States has an undereducated teenage mother.

  And of today's 3-year-olds, 60 percent will be raised by a single parent at some time before 18, and more than half of them will live in poverty.

- *Socio-economic Literacy of Young Adults.* Only 40 percent of the Americans in the national random sample of 30 states in the Adult Performance Level Study knew the term "credit check."

  Only 44 percent were able to select the primary function of advertising.

  Only 30 percent knew the primary function of labor unions.

  An incredible 72 percent felt that police have the authority to detain a person for as long as a week without bringing charges against him.

  Only 40 percent of them knew that a man with a wife and five children is entitled to seven exemptions on his income tax.

  The average percent correct on a series of eleven items on the short-form income tax return was only 18 percent.

  Only 34 percent knew the proportion of votes required for a majority.

TABLE 26. DISABILITIES OF STUDENTS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Disability	Students	Percent
Physical	379	1.2
Learning	489	1.5
Institutional	686	2.2
Limited English	9,912	31.5
None Noted	24,108	76.0
Total	35,574 *	

*Some students have more than one disability.

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- *Computational Skills of Young Adults.* Only 15 percent know how many meters are in a kilometer.

  Only five percent can divide a four-digit number by a two-digit number correctly to the nearest tenth.

  Only four percent are able to determine the correct total cost of three items listed on a mail order form.

  Only 37 percent are able to identify the entry in a monthly individual earnings statement which contains the amount deducted for social security.

- *Incomplete Schooling.* Thirty-three percent of Arizona youths drop out of high school before graduation--the fourth worst completion rate in the nation.
- *Rate of Dropouts.* Data Network for Human Services states that 118,000 Arizona students dropped out of high school from 1984 to 1989--an average of 23,600 per year.
- *Health Problems of Undereducated Adults.* Arizona adults who do not finish high school are nearly three times as likely (29 percent versus 10 percent) to experience health problems than those who were educated beyond high school.
- *Health Problems of Children of Undereducated Parents.* Children of a high school dropout (primary wage earner) are nearly four times as likely (18 percent versus 5 percent) to experience health problems than children whose parents have some form of post-secondary education.

Figure 14. Adult Education: Learning as Inquiry.

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- *The Quality of Life Syndrome*. Generally adults move to Arizona in search of economic opportunity and leave the state because of poor quality of life. Included by State Policy Research among the nine factors used to determine quality of life ratings are education, crime, and adequacy of health care.

  As many as 620,000 households migrated to Arizona and 440,000 left the state between 1980 and 1988. Inadequate services and social instability have seriously impacted Arizona families.

- *Social Implications of Illiteracy*. The Arizona Department of Economic Security points out that among young adults 17- to 21-years-old, 56 percent of Hispanics and 47 percent of Blacks in Arizona are illiterate and the problem of high school dropouts cost Arizonans $5,400,000,000 in lost revenue, profit, and productivity alone.

  The financial loss does not include the associated costs of increased health care, job training, welfare payments, and law enforcement.

- *Arizona Graduation Rate*. The Sixth Annual State Education Performance Chart, which compares state performances in a variety of educational categories, shows that Arizona's high school graduation rate was 64.4 percent in 1987, the latest year for which national statistics were available from the United States Department of Education.

- *Education and the Drug Culture*. High school students who do not plan for extended education are twice as likely to abuse drugs ("crack," cocaine, PCP, heroin) than students with plans for continuing education.

- *The Earning Power of Dropouts*. On the average, high school dropouts earn one-third less income than those who graduate.

Figure 15. Citizenship: Learning the Rights and Duties of the Citizen in American Democracy.

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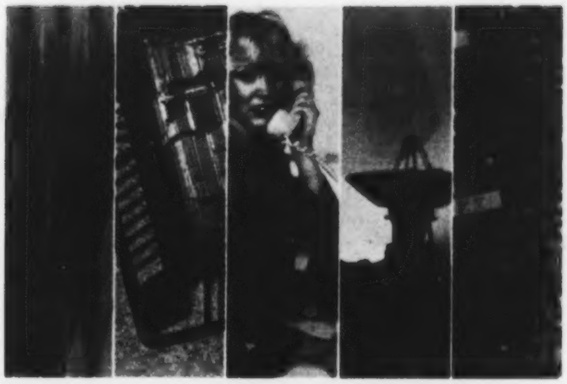

Figure 16. Prehension: **Knowing Where We Have Been, Where We Are Now, and Where We Are Going** Makes It Possible for Us to Know What to Do and How to Do It.

- *Basic Education and Careers in Flux.* The need for basic education and costs associated with job training are highlighted by the fact that the average worker can be expected to hold at least ten jobs and switch careers four or five times between ages 17 and retirement.
- *The Ever-Increasing Need for Educated Workers.* The need for qualified workers in business and industry continues to grow. About 1,400,000 Arizonans are now employed compared with 1,000,000 in 1980.

  During the 1980's Arizona was one of the fastest growing states in the nation, having a population growth of 34 percent.
- *English Language Skills in the Amnesty Program.* Approximately 26,000 individuals in Arizona need to learn English as a result of the amnesty program.
- *Literacy Proficiency of Prison Inmates.* Seventy-five percent of prison inmates and 60 percent of welfare recipients are among the adults in Arizona who have less than a high school education.
- *The Knowledge Gap between School and Workplace.* According to the State Council on Vocational Education, jobs require uses of mathematics and language skills different from the approaches taught in most classes.
- *Reading in the Workplace.* Job skill requirements are increasing. Even blue collar jobs require a daily average of 1 1/2 hours of reading.

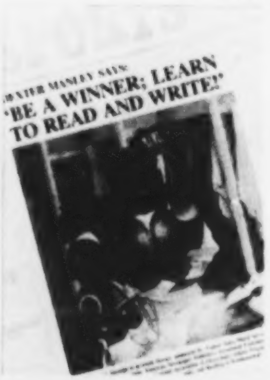
'BE A WINNER; LEARN TO READ AND WRITE!'

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Figure 17. Interests: The Development of New Interests Begins With Present Interests.

- *A Changing Population with Changing Educational Needs.* During the 1980's, 500,000 legal immigrants a year accounted for one-fifth of the population growth of the United States.

  About 200,000 illegals a year also joined the nation's population.

  Mexicans, Filipinos, Chinese, Koreans, and Vietnamese are the most common arrivals.

  These immigrants are the driving force behind changing the racial and ethnic composition of the United States. They are also the driving force changing the racial and ethnic composition of Arizona.

  Racial and ethnic minorities in Arizona constitute 653,716 of the state's population of 3,714,300.

  Arizona has grown three times as fast as the nation as a whole during the past ten years.

  The capital city of Arizona has had a 43 percent gain in population during that period.

- *Illiteracy by Age Categories.* Of those Arizonans who are functionally illiterate, 56 percent are under 50 years of age, 35 percent are 20 to 30 years of age, 70 percent did not complete high school, and approximately 4 percent attend adult literacy programs.

- *Functional Illiteracy by Certain Strata.* Illiterate individuals in Arizona include 85 percent of all juvenile offenders, 75 percent of the unemployed, 60 percent of prisoners, and 10 percent of drivers.

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Figure 18. Ends and Means: A High, Positive Relationship between Schooling and Earnings.

- *The Workplace in the Home*. There are 9,200,000 Americans who already have a taste of the future, working at home. These telecommuters are necessarily functionally literate persons in positions such as construction trades, executive, manager, sales, engineer, scientist, business consultant, technician, government, public sector, healthcare professional, lawyer, accountant, clerical, teacher, and the like.

- *The Growing Complexities of Most Jobs*. The Hudson Institute, in a study for the Department of Labor called *Workforce 2000*, confirms the growing complexity of most jobs.

  By the year 2000 below-average skills will be good enough for only 27 percent of jobs created between 1985 and then, compared with 40 percent of the jobs existing in the mid-1980s.

  Forty-one percent of the new jobs will require average or better skill levels, up from 24 percent.

- Employers are finding many high school graduates cannot read. Or add. Or even fill out simple forms necessary to get a job.

  One recent survey of Fortune 500 companies found that 58 percent complained of having trouble finding employees with basic skills.

  The future might be even more bleak for employers in the United States.

  Every fifth person now hired by American industry is both illiterate and innumerate.

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Figure 19. Human Relations: Learning through Interrelationships.

By the year 2000, according to the United States Department of Labor, the bulk of the labor pool growth will come from minority-group students, although nearly 40 percent of those students now are functionally illiterate.

- *The Past, Present, and Future of Dropout Rates.* The National Dropout Prevention Center, The Coalition for Literacy, and *U.S. News and World Report* provide some insight into where we have been, where we are now, and where we are going with respect to the dropout problem:

  The Past. More than 70,000,000 American adults have never graduated from high school.

  The Present. Nearly 1,000,000 youths drop out of school every year.

  The Future. The National Dropout Prevention Center projects a staggering 40 percent dropout rate by the year 2000.

- *The High School Graduation Rate.* The high school graduation rate in the United States was 71.1 percent in 1987, the latest year for which such statistics can be calculated by the United States Department of Commerce.

- *Ethnicity, Dropouts, and Employment.* Forty-two percent of black high school dropouts age 16 to 24 are unemployed. Only 22 percent of white high school dropouts in the same age group are jobless.

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- *Illiteracy and Crime*. Of all the inmates in Arizona penal institutions 90 percent are high school dropouts. Sixty-five percent of prisoners are not functionally literate.

  The cost to maintain a prisoner for one year is greater than the tuition for a student at any one of Arizona's universities.

  The Arizona Department of Corrections spends approximately $15,600 per year per incarcerated adult and $22,100 per juvenile.

  In contrast the Arizona Department of Education spends only $401.40 per adult student per year (180 hours of instruction) in adult education.

- *Literacy and Ethnicity*. The high school dropout rate among Blacks, Hispanics, and Native Americans in Arizona is twice that of Whites.

  There are 631,431 young adults (20 to 29 years of age) in Arizona--17 percent of the population of the state. Of that number (631,431) 102,292 (16.2 percent) are of Spanish heritage; 5,051 (.008 percent) are of Oriental heritage; 17,680 (.028 percent) are of Afro-American heritage; 35,360 (.056 percent) are of American Indian heritage; 53,040 (.084 percent) are of "other" heritage; and 520,299 (.824 percent) are of Caucasian heritage. The percentages total more than 100 percent for the reason that those of Spanish heritage are included in more than one category.

  Of the 111,131 minority young adults (20 to 29 years of age) in Arizona, 66,679 (60 percent) are functionally illiterate and 44,552 (40 percent) are literate.

- *Illiteracy and the Licensing of Drivers*. Of the 2,416,057 individuals in Arizona with valid Arizona Drivers' Licenses, more than 41,000 individuals are functionally illiterate, having had their drivers' license tests administered to them orally.

Challenges--Summary. These demographic data briefly point up the basic elements of the challenges in adult education in the State of Arizona. Part II of this report is a brief portrayal of the role of the Arizona Department of Education in meeting the demand of those challenges.

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PART II

RESPONSES

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ADULT EDUCATION--LEARNING UNLIMITED

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PART II. RESPONSES

Lifelong Learning. The search for solutions to educational problems in America and Arizona requires a commitment to lifelong learning. From now until the end of the century, 1,500,000 new workers will enter the American economy.

From now until the end of the century 150,000 new workers will enter the American economy each year.

The Changing American Workforce. The new American workforce will be distinctively different from workforces of the past.

Eighty-eight percent of its growth will come from women and people of Afro-American, Hispanic, and Asian origins, including immigrants.

WE CAN MAKE A DIFFERENCE

Figure 20. Dynamics of Change: The New Workforce.

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At the present time Caucasian men account for most of the retirees; these retirees are leaving the workforce in record numbers.

In 1988 the American labor pool consisted of 44 percent Caucasian men, 34 percent Caucasian women, 16 percent minority men, and 16 percent minority women.

During the next decade new Caucasian workers will include 33 percent men, 35 percent Caucasian women, 16 percent minority men, and 16 percent minority women.

Also during the next decade exiting workers will include 50 percent Caucasian men, 35 percent Caucasian women, 7 percent minority men, and 8 percent minority women.

The labor pool in the year 2000 will include 40 percent Caucasian men, 35 percent Caucasian women, 13 percent minority men and 12 percent minority women.

The Changing Arizona Workforce. At the present time (1989-1990) the average annual Arizona labor pool includes 1,714,600 (100 percent) persons--1,627,676 (94 percent) employed, 86,900 (6 percent) unemployed.

In 1988 there were 1,654,001 (100 percent) men and women in the Arizona workforce--1,415,142 (85.6 percent) non-Hispanic; 1,299,994 (78.6 percent) White; 40,289 (2.4 percent) Afro-American; 58,713 (3.5 percent) Native American; 1,951 (0.1 percent) "other"; and 238,859 (14.4 percent) Hispanic.

Figure 21. The New Workforce: Strength in Diversity.

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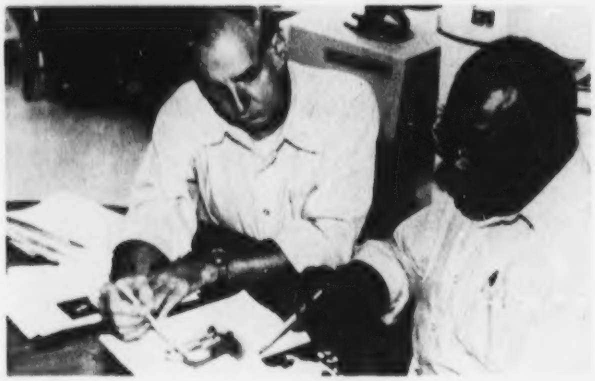

Figure 22. Higher Order Thinking: A High Priority in the New Workforce.

In this workforce there were 963,629 (58.3 percent) men and 690,372 (41.7 percent) women.

There were 354,001 (21.4 percent) minority workers and 1,299,142 (78.6 percent) Caucasian workers.

In the year 2000, according to the Bureau of Economic Analysis, United States Department of Commerce, there will be 5,000,000 (100 percent) men and women in the Arizona workforce--4,280,000 (85.6 percent) non-Hispanic; 3,930,000 (78.6 percent) white; 120,000 (2.4 percent) Afro-American; 175,000 (3.5 percent) Native American; 45,000 (0.9 percent) Asian; 5,000 (0.1 percent) "other"; and 720,000 (14.4 percent) Hispanic.

In this workforce there will be 2,915,000 (58.3 percent) men and 2,885,000 (41.7 percent) women.

There will be 1,070,000 (14.4 percent) ethnic minority workers, and 3,930,000 (78.6 percent) white workers.

During the period 1988 to 2000, total personal income in Arizona will increase to $58,900,000 from $41,900,000.

Per capita personal income in Arizona is predicted to increase 15.8 percent to $13,926 from $12,029.

Job growth from 1988 to 2000 will be high, increasing 26.7 percent to 2,285,000 jobs from 1,804,000, ranking Arizona 22nd nationally in total employment.

TABLE 27. ENROLLMENT BY AGE AND SEX OF STUDENTS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Age	Male	Female	Total	Percent
16-17	1,039	1,247	2,286	7.2
18-21	3,430	3,153	6,583	20.8
22-24	2,446	2,299	4,745	15.0
25-29	3,006	3,061	6,067	19.1
30-44	3,878	5,222	9,100	28.7
45-59	1,056	1,441	2,497	7.9
60+	158	271	429	1.4
Total	15,013 (47.3)	16,694 (52.7)	31,707 (100.0)	100.0

The Relationship of Social and Educational Change. In terms of their many diverse needs the workers of Arizona will have to have further educating and reeducating if they--and we as a nation and state--are to thrive and prosper.

Instructional and Testing Programs for Adult Students. To meet the demands of a rapidly changing society and the rapidly changing socio-economic needs of that society, the Division of Adult Education, Arizona Department of Education, provides an ever-expanding array of instructional programs and testing programs.

Clientele in the Instructional and Testing Programs. There were from 1988 to 1989 41,489 adults in the instructional and testing programs of the Division of Adult Education, Arizona Department of Education:

- *Enrollment in Adult Education Programs.* In 1988-1989 more than 31,707 students enrolled in Arizona adult education instructional programs--1,317 in the Adult Basic Education Program, I (1 to 4 levels); 5,273 in the Adult Basic Education Program, II (5 to 8 levels); 6,828 in the Program for General Educational Development (High School Equivalency); 17,456 in the English as a Second Language (ESL) Program; and 833 in the Citizenship Program.

- *Examinees in the GED Testing Programs.* In 1988-1989 the test on General Educational Development (GED) was administered to 11,451 adults in Arizona, the 11,451 test batteries including 57,255 individual tests.

The Adult Education Programs. The Division of Adult Education, Arizona Department of Education, provides ten instructional programs for its clientele in Arizona:

- The Adult Basic Education (ABE) Program (Levels 0 to 4 and 5 to 8).
- The Special Projects Program (Identified as Section 353).
- The Instructional Program for General Educational Development (High School Equivalency).

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- The Testing Program for General Educational Development.
- The Instructional and Testing Program for Institutional Adults.
- The Program for English as a Second Language.
- The Citizenship Program.
- The English Literacy Proficiency Program.
- The Workplace Literacy Program.
- The Family Literacy Program.

The Development of Skills. Courses offered through these adult education programs provide students with opportunities to develop skills in the following:

- Reading.
- Writing.
- Speaking.
- Listening.
- Demonstrating.
- Observing.
- Computing.
- Citizenship.
- Cultural Literacy.
- Scientific Literacy.
- General Education.
- English as a Second Language.
- Vocation.
- Avocation.
- Family and Community Living.
- Family Literacy.
- Critical Thinking.
- Problem Solving.
- Interpersonal Relationships.
- Worthy Use of Leisure Time.
- Worthy Home Membership.
- Ethical Character.
- Learning How to Learn.

These skills are learned in courses taught by competent teachers, most of whom have subject matter degrees and all of whom are certified to teach by the State of Arizona.

TABLE 28. ATTENDANCE OF STUDENTS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988-1989.

Total Hours	1,185,841
Number of Students	31,707

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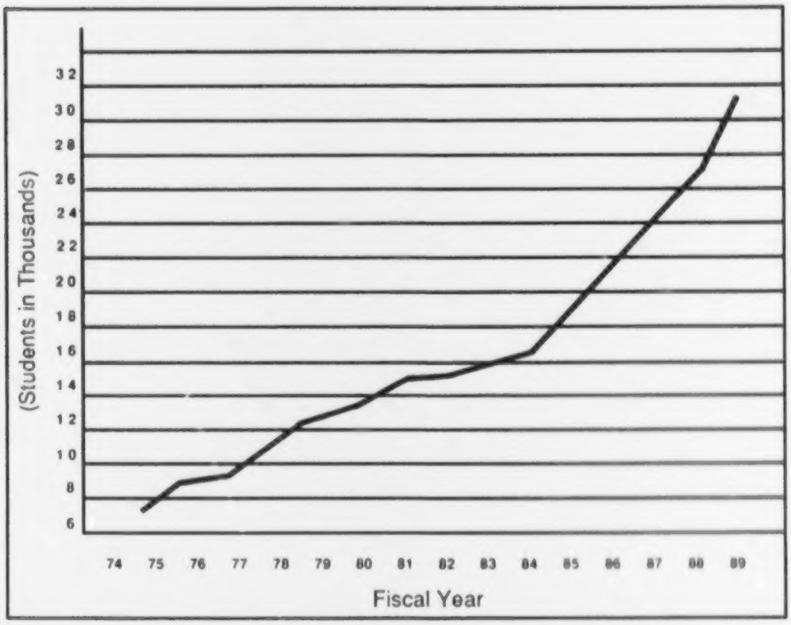

Figure 23. Enrollments in Arizona Adult Education Programs, 1975 to 1989.

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TABLE 29. ENROLLMENTS OF STUDENTS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

	First Time	Previous	Total
Total	28,538 (90)*	3,169 (10)	31,707 (100)

* Percentages are in parentheses.

- *Classes, Centers, and Projects.* In 1988-1989 students attended 185,000 hours of instruction in 39 adult learning centers that fielded 74 projects in Adult Basic Education (ABE), English as a Second Language (ESL), General Educational Development (GED) and Citizenship. In all, instruction is available in 386 classroom units in Arizona--170 class units for daytime use and 216 for evening use.

- *Cost of Instruction.* The cost of the various adult education programs for 1988-1989 was $75.01 per student for an average of 37.1 hours of instructional time.

  By way of comparison, the average cost per hour of instruction per pupil in an elementary school in Arizona is $24.97; the average cost per hour of instruction per person in an adult education program in Arizona is $2.11.

  The cost per hour for the instruction of an elementary school pupil is 11.83 times greater than it is for a student in an adult education program.

TABLE 30. PERCENTAGE OF GED EXAMINEES IN ARIZONA COMPLETING CERTAIN GRADES IN SCHOOL.

Grade	Percentage of Persons Completing the Grade
6	1.0
7	1.9
8	9.4
9	17.1
10	29.8
11	35.6
12	5.1

The average highest grade--10.0

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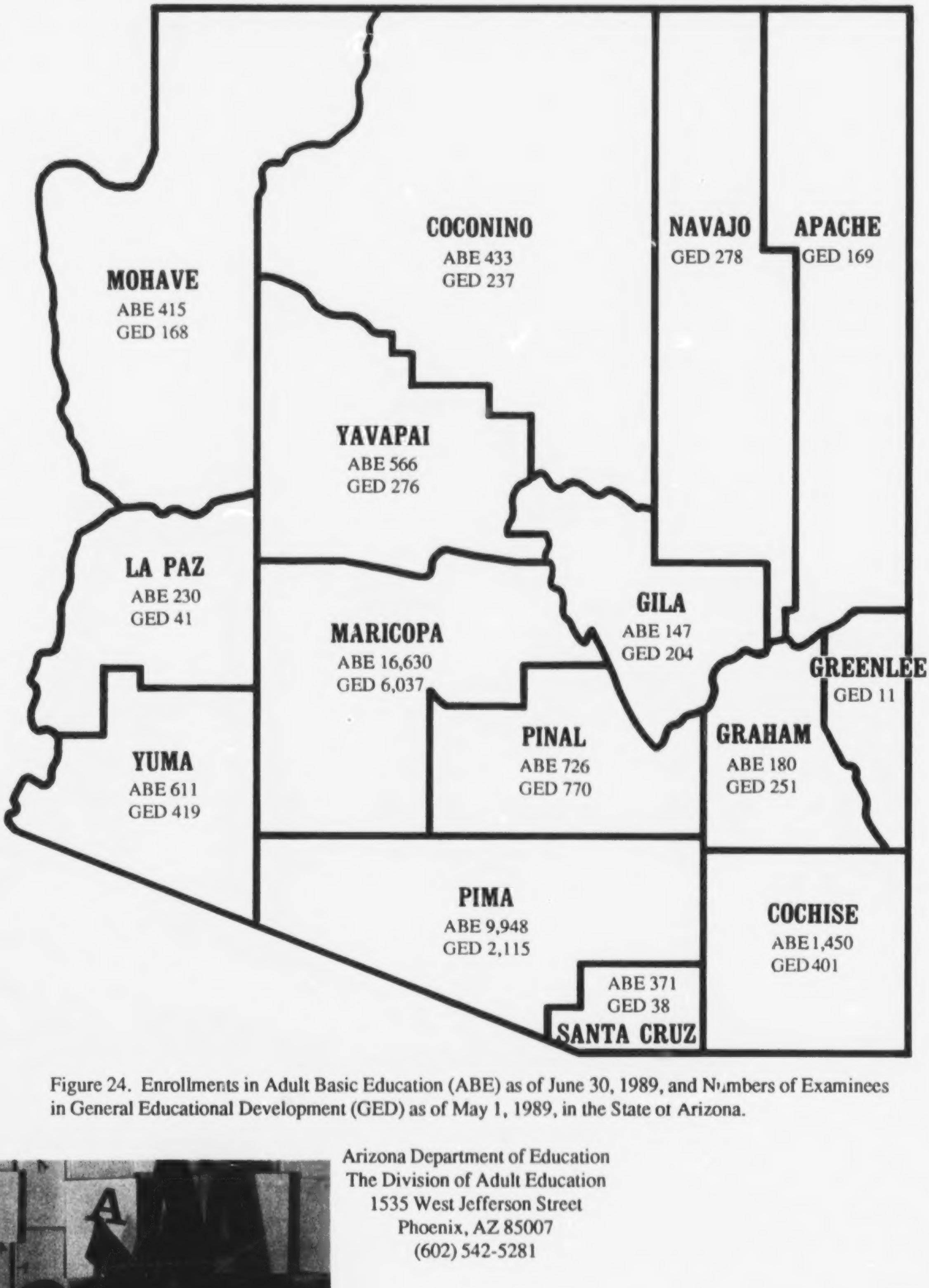

Figure 24. Enrollments in Adult Basic Education (ABE) as of June 30, 1989, and Numbers of Examinees in General Educational Development (GED) as of May 1, 1989, in the State of Arizona.

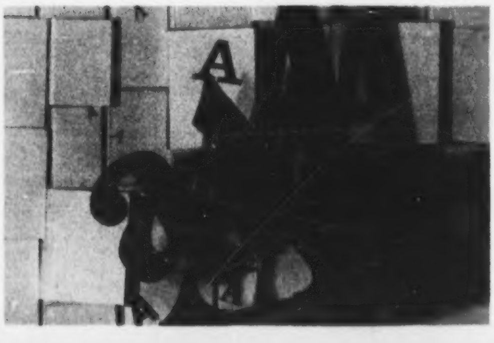

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TABLE 31. PERCENTAGE OF GED EXAMINEES IN CERTAIN AGE GROUPS IN ARIZONA.

Age Group	Percentage of Persons in Each Age Group
17	16.7
18-19	26.9
20-24	24.9
25-29	12.3
30-34	7.6
35-39	5.0
40-49	4.3
50-59	1.5
60+	0.3

Average age--23.6.

Testing Programs for Adults. The tests of General Educational Development (GED) serve those who are not high school graduates by providing them with a formal opportunity to demonstrate a level of achievement comparable to that of typical high school graduates.

- *Programs of Study for the GED Test.* Programs to assist students in their preparation for the GED test are provided in all 39 of the adult learning centers in Arizona.

- *Centers for General Educational Development (GED) Testing.* General Educational Development (GED) tests are administered in 44 testing centers and 39 adult learning centers located throughout Arizona.

- *The Record of GED Testing in Arizona.* The State of Arizona issued diplomas to 9,098 adults for the completion of the GED test in 1987-1988 and to 7,292 adults in 1988-1989.

  The average annual growth rate from 1985 to 1989 in the awarding of GED diplomas in Arizona--more than 7.83 percent--ranks seventh among the states in the United States.

  Of the 11,451 individuals who had the GED test administered to them in Arizona in 1988-1989 there were 63.6 percent of them (7,292) who completed it successfully.

  Thus far in 1989-1990 13,661 test batteries have been administered; it is estimated that 20,161 test batteries (100,805 individual tests) will have been administered at the end of the fiscal year 1989-1990.

  GED diplomas make up 21.6 percent of all high school diplomas awarded in Arizona.

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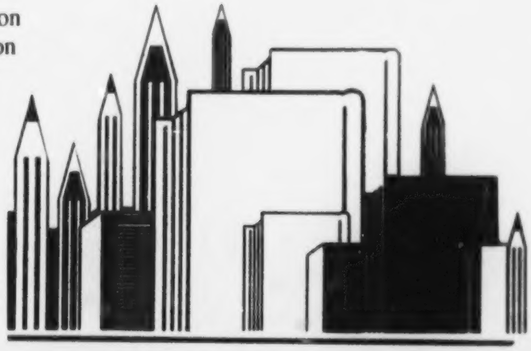

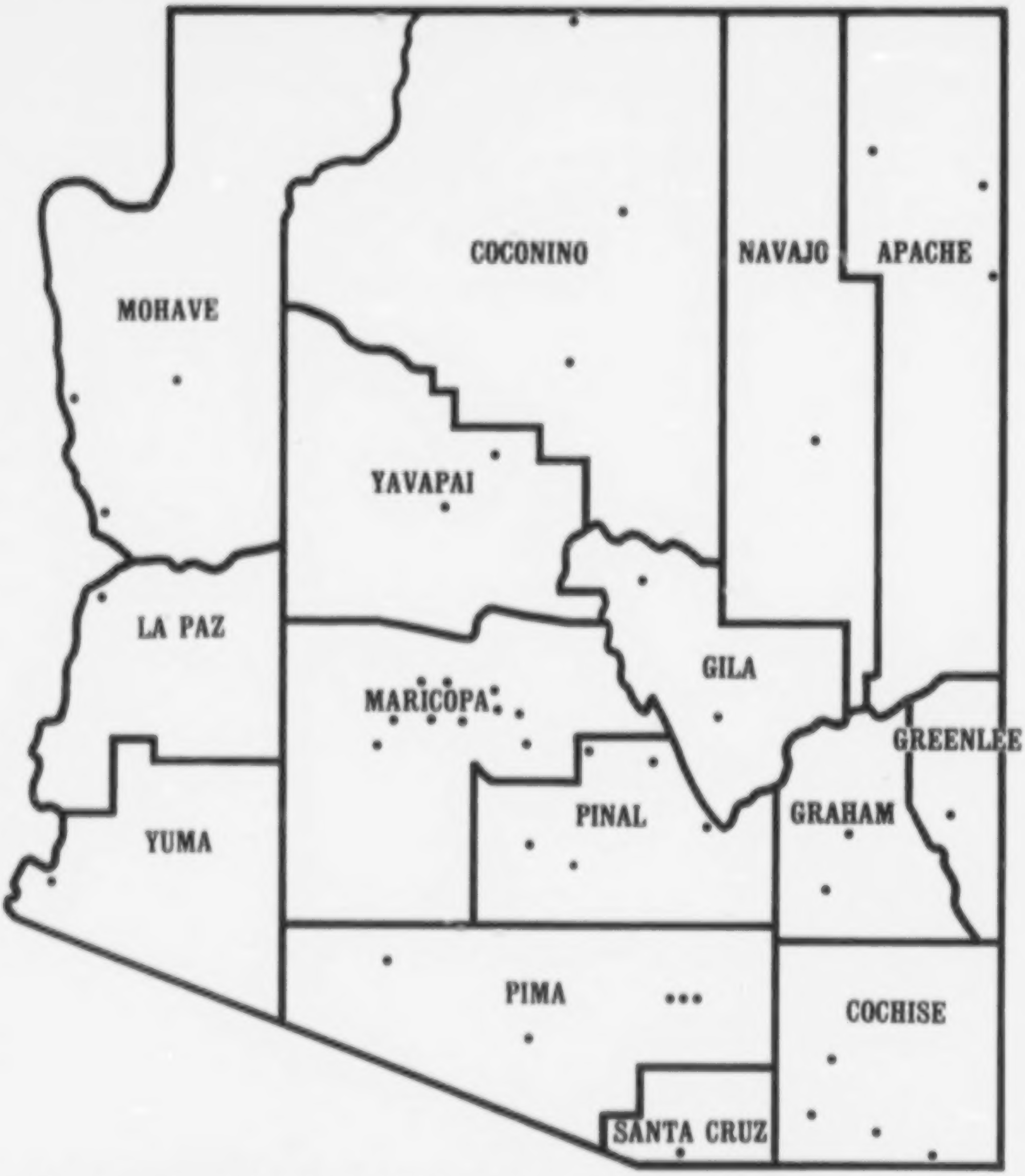

Figure 25. Locations of Testing Centers of the Division of Adult Education, Arizona Department of Education.

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TABLE 32. GED DIPLOMAS ISSUED IN ARIZONA, 1971 TO 1989.

Year	Diplomas Issued
1985	8,079
1986	7,852
1987	7,971
1988	9,098
1989	7,292
Cumulative 1971 to 1989	124,080

GED diplomas make up 18.9 percent of all diplomas awarded in the United States.

Arizona ranks eighth in the nation with respect to the number of GED diplomas awarded.

Two men from diverse backgrounds--Adalberto Lopez, 28, who moved to Arizona from Mexico two years ago, and Kenneth Gielen, 26, a construction worker in Phoenix--had the highest GED test scores in Arizona in 1988-1989. Both placed in the top ten percent of students taking the GED in the United States and Canada, for which they received awards from the American Council on Education. Of a potential perfect score of 400, Mr. Lopez, who took the Spanish Version of the test, scored 377, and Mr. Gielen scored 366.

Evangelina Olea completed an Arizona Adult Education Program in 1988-1989 and was one of eight individuals honored on a nationally televised program, ABC's "To Be Free: The National Literacy Honors from the White House." The program was hosted by President George Bush and Ms. Barbara Bush. Ms. Olea is now enrolled at the post-secondary level and is an adult education teacher-volunteer and counselor. She was one of three teachers, two national celebrities, and three students honored at the White House ceremony. "The National Literacy Honors" was presented under the auspices of Project Literacy U.S. and the National Coalition for Literacy, and was sponsored by Bell Atlantic.

- *The Availability of Special Editions of the GED Test.* The GED test is available in special editions and adaptations:

Of the 11,451 adults tested in 1988-1989, 3 used audio cassettes, none used braille, 266 used large print, 16 used time adaptation, 5 used a reading device, 2 used answer marking, and 8 used other special adaptations.

The GED test is available in English, Spanish, and French editions.

Of the 11,451 individuals tested in 1988-1989, 11,303 used the English edition, 148 the Spanish, and none the French.

- *The Need to Extend the Testing Programs.* GED has the largest graduation class in Arizona and in the United States.

  Despite its impressive statistics of growth, Arizona still has 516,000 persons who are not high school graduates. In this regard Arizona ranks ninth in the nation.

  With 18,451 high school dropouts in 1988-1989, Arizona ranks 39th in its effort to decrease its rate of dropouts. Only five states in the United States were able to decrease their dropout rates.

  The average age of individuals in Arizona to whom the GED test is administered is 23.6.

Goals in the Administration of Instructional and Testing Programs. All in all, the goals in the administration of the instructional and testing programs of the Division of Adult Education, Arizona Department of Education, are many and varied:

- To use materials of instruction drawn from the problems students have in their everyday lives.
- To include approaches to teaching that involve thinking and reasoning, comprehension, and language experience.
- To assist students to attain the self-confidence and self-esteem they need to become active, self-motivated learners.

TABLE 33. REFERRALS TO ARIZONA ADULT EDUCATION PROGRAMS BY VARIOUS INDIVIDUALS AND AGENCIES,1988 TO 1989.

Individual/Agency	Students	Percent
Friend/Relative	18,182	57.3
Media	4,329	13.7
School	4,026	12.7
Department of Economic Security	2,398	7.6
Other Student	1,851	5.8
Employer	632	2.0
Church	289	.9
Total	31,707	100.0

TABLE 34. STAFFING OF ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Staff	Salaried	Volunteer	Total
Teachers	938	679	1,617
Aides	145	494	639
Other	16	145	161
Total	1,099	1,318	2,417

- To help students to reach standards of performance consistent with their personal and socio-economic goals.
- To reach as many potential Arizona students as possible in Adult Basic Education (ABE), English as a Second Language (ESL), Citizenship, and General Educational Development (GED), in cooperation with other agencies and groups.
- To enable these students to progress in their education quickly and effectively.
- To make available the means to secure education that will enable the students to further their personal goals and become more employable, productive, independent, and responsible citizens.
- To maintain efficient and economical programs.

TABLE 34. (CONTINUED).

Staff	Paid Hours	Volunteer Hours	Total Hours
Teachers	116,716.5	30,231.5	146,948.0
Aides	16,912.5	27,022.7	43,935.2
Other	401.0	6,288.0	6,689.0
Total	134,030.0	63,542.2	197,572.2

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Educational Outcomes in the Arizona Programs. Statistical analyses to determine the effectiveness of the programs in adult education under the aegis of the Division of Adult Education, Arizona Department of Education, are presented in tabular form in Parts II and III of this report.

Purposive research samples in what is called "ground level research" have also been used to determine the effectiveness of the programs.

By way of developmental profiles (evaluations expressed in expository terms) teachers identify on a sporadic basis their perceptions of behavioral changes of individual students in the purposive sample populations.

Examples of these expository statements, such as the following (with names of students omitted) provide some insight into the variety and nature of educational outcomes that prevail in the adult education programs:

- . . . has improved prospects for a better job in his place of work.
- . . . has good opportunities for employment, especially where none existed before.
- . . . now sees the likelihood of not having to depend on public welfare.
- . . . reads extensively and is developing understanding of the customs, ideas, and values of the culture in which he lives.
- . . . writes with increasingly greater clarity about her needs and thoughts.

Figure 26. Adult Education: The Greater the Purpose, the Greater the Effort, the Greater the Learning.

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Figure 27. Adult Education: The Means to a Better Life.

- . . . is becoming increasingly more adept at estimating, approximating, measuring, and testing his calculations.
- . . . is developing an understanding of the everyday social and environmental implications of scientific and technological advances.
- . . . is developing an understanding of how in the country in which he lives the economic system works and the political system functions.
- . . . is gaining a better grasp of how to develop good physical and mental health.
- . . . is learning the advantages of good citizenship.
- . . . is developing mature concepts of self, especially self-esteem.
- . . . is learning how to think for himself and to weigh alternative proposals for the solution of problems.
- . . . is becoming increasingly more empathetic, increasingly more insightful in interpersonal relationships.

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- . . . is learning to be increasingly more responsible for the things she says and does.
- . . . is becoming more philosophical by seeing relationships between things in her world.
- . . . is becoming more skillful and confident in his attemps to communicate effectively.

The Recruitment of Students and Teachers. Project Literacy U.S. (PLUS), through the combined efforts of the American Broadcasting Company and the Public Broadcasting Service, has done an outstanding job of defining the problem of adult illiteracy and portraying some of the efforts now underway to solve it. Chief among those efforts in Arizona are those of the Arizona Adult Literacy Link (AzALL). The concept of AzALL was formulated by the Division of Adult Education, Arizona Department of Education. AzALL is operated by Rio Salado Community College with funds from the office of the Job Training Partnership Act of the Arizona Department of Education.

- *Purposes and Functions of Arizona Adult Literacy Link (AzALL).* By way of its toll-free adult literacy telephone line, 1-800-345 EDUC, the Arizona Adult Literacy Link (AzALL) has various purposes and functions:

  It assists in the placement of those who want to volunteer for a position as a tutor or teacher, advocate, office worker, support staff member, or manager in an adult literacy program.

  It assists in placing in an appropriate program a person 16 years or older who wants to learn to read, write, and compute.

Figure 28. The Literacy Hotline: Arizona Adult Literacy Link --1-800-345-EDUC.

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It provides speakers for any organization having a meeting on the topic of adult literacy.

It helps organizations in their sponsoring of projects and activities involving the theme of adult literacy.

It assists organizations wanting to develop literacy providers organizations in their communities.

It acts as a conduit between civic groups and business community leaders in promoting literacy programs.

It assists in the providing of information about grants to groups administering adult literacy programs.

- *The AzALL Record of Operations*. The summative record of AzALL operations is as follows:

Brochures printed in English and Spanish explain the purposes and functions of AzALL and are sent to families, churches, businesses, resource agencies, and media throughout Arizona.

The Arizona Adult Literacy Link (AzALL) was established September 3, 1986.

During the fiscal year 1987-1988, more than 1,644 calls were processed; during the fiscal year 1988-1989, 2,082 calls were processed, an increase of more than 27 percent.

Figure 29. Lifelong Learning: We Long for What Is Past and Pine for What is Not.

Figure 30. A Basic Goal of Adult Education: To Understand the Main Facts Concerning the Nature of the World.

In 1988-1989 there were 254 (12 percent) calls from individuals seeking information about locations of places at which basic skills were taught.

More than 510 (24 percent) calls were from individuals seeking information about locations of places at which preparation for the General Educational Development (GED) test was available.

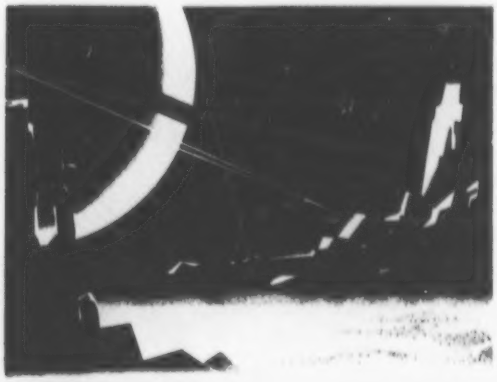
Approximately 596 (29 percent) calls were from individuals seeking information about locations at which teaching English as a Second Language (ESL) was available.

Approximately 520 (25 percent) calls were from individuals seeking information about opportunities to volunteer their time and talents.

There were 202 (10 percent) calls from individuals seeking general information about programs and events related to adult education.

There were 703 (34 percent) calls from men, and 1,379 (64 percent) calls from women.

The distribution of callers by age groups was as follows: Under 30--617 (30 percent); 30 to 50--1,340 (64 percent); over 50--125 (6 percent).



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Calls were received from the following locations--Ahwatukee, Apache Junction, Avondale, Benson, Black Canyon City, Bowie, Buckeye, Bullhead City, Camp Verde, Carefree, Casa Grande, Chandler, Chino Valley, Colorado City, Congress, Coolidge, Cornville, Cottonwood, Deer Valley, Douglas, El Mirage, Eloy, Flagstaff, Florence, Fountain Hills, Gila Bend, Gilbert, Glendale, Globe, Green Valley, Hillside, Holbrook, Kingman, Lake Havasu, Las Vegas NV, Litchfield Park, Los Angeles CA, Mesa, Oracle, Page, Paradise Valley, Parker, Patagonia, Peoria, Phoenix, Pinetop, Piñon, Prescott, Prescott Valley, Queen Creek, Riviera, Safford, San Carlos, Scottsdale, Sedona, Sierra Vista, Show Low, Sun City, Sun Lakes, Superior, Tempe, Tolleson, Topock, Tuba City, Tucson, Wenden, Wickenburg, Wittman, Yarnell, Yuma.

The effectiveness of AzALL has been measured on the basis of a "purposive sample"--a representative adult basic education program. This program had an increase of more than 1,000 students attributed to the use of AzALL, 2,869 more than the projected number that was used when funding was requested for FY87-88.

Some adult learning centers throughout the state report increases in enrollment of as much as 35 percent on the basis of referrals made through AzALL.

Information about the purposes and function of AzALL is included in the computerized resources database of Community Information and Referral Services (CIRS). In this way referrals from CIRS to AzALL can be made expeditiously and economically.

Figure 31. Purposeful Living: The Great and Glorious Masterpiece of Man Is How to Live with a Purpose.

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On the basis of a State Legalization Impact Assistance Grant (SLIAG), the addition of a bilingual component to providing information about amnesty classes has made possible the further extension of the valuable services of AzALL.

AzALL takes its sense of purpose and direction from a statement of James Duffy in a joint publication of the United States Department of Education and the United States Department of Labor:

"The answer lies in working together. No single organization, no one political initiative has the scope to address the issue. What is required is the establishment of partnerships--between industries, public and private sectors, media and educators, religious and civic groups--that will encourage constructive change with lasting impact. The opportunities exist. What remains now is the task of building bridges . . ."

Figure 32. Group Process: Social/Self Realization.

Staff Development. The Division of Adult Education, Arizona Department of Education, has played a key role in the professional development of teachers, directors, and paraprofessionals in its programs in Arizona. The Division has organized the state into 7 regions for the purpose of meeting the demands of local staff development needs. It has also held a statewide 1988 Adult Education Conference for the purpose of enhancing staff development. Participating in the Conference were 542 teachers, directors, and paraprofessionals and 54 exhibitors. Based upon the theme of staff development, the 3-day Conference consisted of (a) 54 concurrent sessions on curriculum and instruction, counseling, management, literacy, general educational development, English as a second language, and writing; (b) 3 general sessions including presentations by Dr. Terrel H. Bell, Former United States Secretary of Education, and Dr. Gary A. Eyre, Director, Division of Adult Education, Arizona Department of Education; (c) a college credit course in Adult Education; (d) workshops for program directors and GED examiners; (e) meetings of the Council of Representatives for Staff Development; and (f) meetings of professional organizations in the field of adult education.

Figure 33. Staff Development: Teachers Teaching Teachers.

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ARIZONA ADULT EDUCATION REGIONS

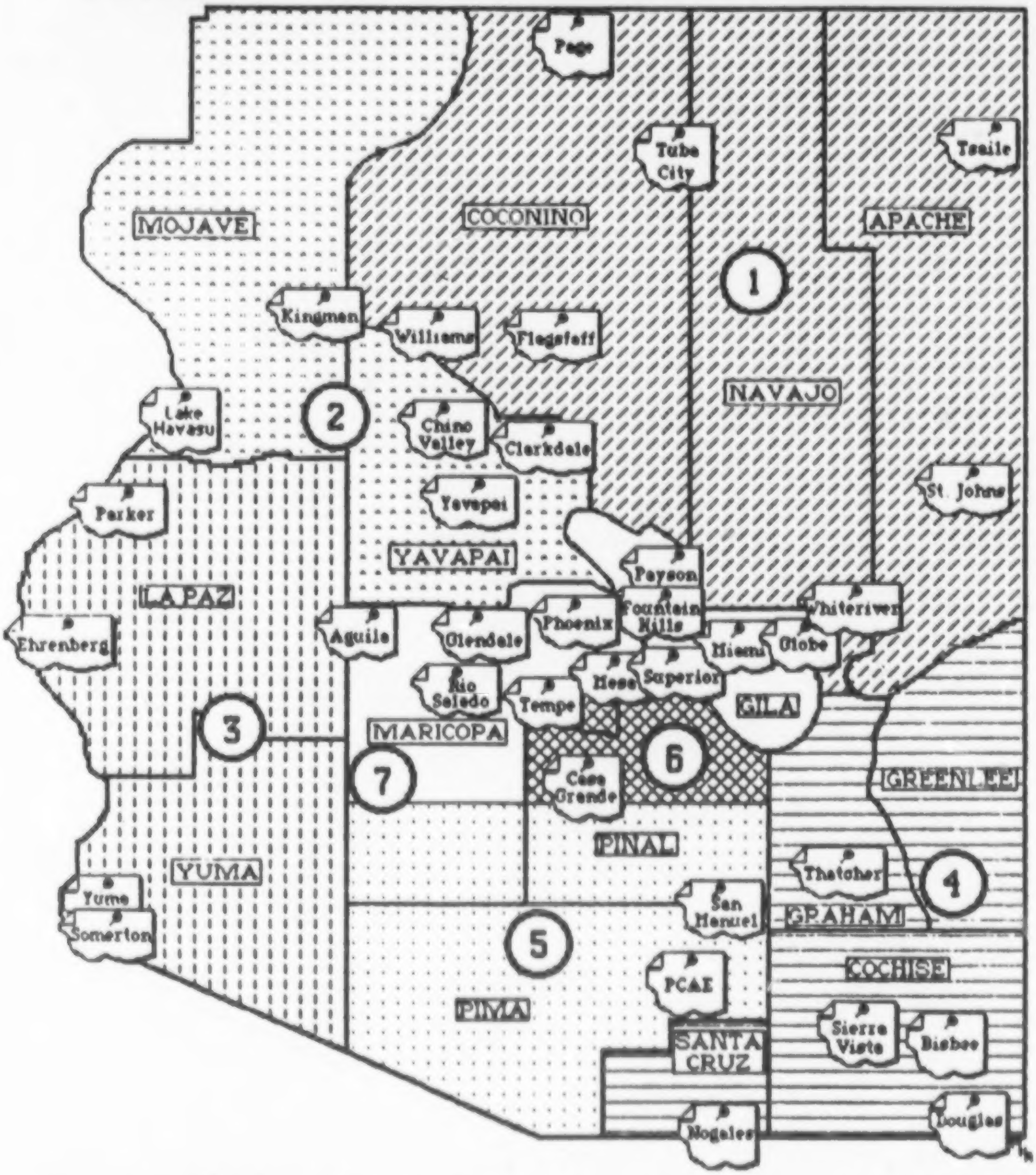

Figure 34. Staff Development: Regions of the Adult Education Staff-Development Consortium in the State of Arizona, 1990.

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Equity and Quality. Public commitment to educational excellence and opportunity must not be made at the expense of a strong public commitment to the equitable treatment of our diverse population. The twin goals of equity and quality schooling have profound and practical meaning for our economy and society, and we cannot permit one to yield to the other in principle or in practice.

TABLE 35. EMPLOYMENT STATUS OF STUDENTS AT THE BEGINNING AND ENDING OF THEIR ADULT EDUCATION PROGRAMS, IN ARIZONA, 1988 TO 1989.

Employment Status at the Beginning of the Adult Education Program	Number of Students	Employment Status at the Ending of the Adult Education Program	Number of Students
Full Time	11,396	Full Time	12,173
Part Time	4,136	Part Time	4,467
Unemployed	16,175	Unemployed	15,067
Total	31,707		31,707

TABLE 36. PUBLIC WELFARE RECIPIENT STATUS OF STUDENTS AT THE BEGINNING AND ENDING OF THEIR ADULT EDUCATION PROGRAMS, IN ARIZONA, 1988 TO 1989.

Public Welfare Recipient Status at the Beginning of the Adult Education Program	Number of Students	Public Welfare Recipient Status at the Ending of the Adult Education Program	Number of Students
No	28,967	No	29,112
Yes	2,740	Yes	2,595
Total	31,707	Total	31,707

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PART III

INTERPRETATIONS

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ADULT EDUCATION--LEARNING UNLIMITED

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PART III. INTERPRETATIONS

Unlike any other species on the face of the earth, human beings are characterized especially by the ability to think by articulating verbal symbols. For each of us growth begets more growth. The process of growth involves the reconstruction of experience--rethinking each experience, thus at least to that extent facing each subsequent situation a different person, one who behaves in terms of an anticipation of consequences.

Basic to this growth is functional literacy--the ability to read and write in terms of understanding and creating symbolic verbal meaning stored in some permanent form. In modern-day education functional literacy is a basic skill to be taught so as to make it possible for individuals (1) to attain the personal goals they set for themselves, (2) to meet the demands made upon them by the society in which they live, (3) to solve the problems they face in their everyday lives, and (4) to enhance their growth and development to keep pace with constantly changing cultural, socio-economic conditions.

Social Needs. In a bygone day children were tested, retested, and tested again so that their school records could identify their I.Q.'s--their intelligence quotients. In professional terms, the tests were to measure their native intelligence, the old supposition being that America would always find a way, that those with brains, as few as they were, would always see everyone through and see themselves through.

Figure 35. Communication: Functional Literacy at Work.

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Figure 36. Space Age Technology: The Dynamics of Social Change.

That old notion is nonsense, says William Baker, Chairman of Bell Laboratories of American Telephone and Telegraph Company.

What needs to be emphasized more than native intelligence, especially since native intelligence cannot be changed, is effective intelligence--higher order thinking.

Effective intelligence is behavior that is guided by an anticipation of consequences.

Individuals survive because in the big things as well as small things they behave in terms of anticipating consequences.

They know the consequences of alcoholism and behave accordingly. They know the consequences of drug addiction and behave accordingly. They know the consequences of crime and behave accordingly. They know the consequences of sexual disease and behave accordingly. They know the consequences of indolence and behave accordingly.

Men and women, you see, have a moral obligation to behave in terms of consequences. They have a moral obligation to practice effective intelligence--higher-order thinking.

The question, then, is, How do individuals develop effective intelligence?

It is an irrefutable fact in educational research that those in our society who are the most insightful are indeed the most literate.

Individuals use their literacy to capitalize on the wisdom of the ages, the wisdom of their times, and the wisdom of their places of work.

For example, *The Readers Digest* in high interest/low readability format condenses various books and articles from all over the world on matters of health, economics, politics, religion, sex, crime, delinquency, poverty, drug abuse, marriage, and the like.

But who in America and Arizona can read *The Readers Digest* or other such publications even when they are written at high interest/low readability levels?

There are 112,908,000 adult Americans who cannot and 1,621,292 Arizonans who cannot.

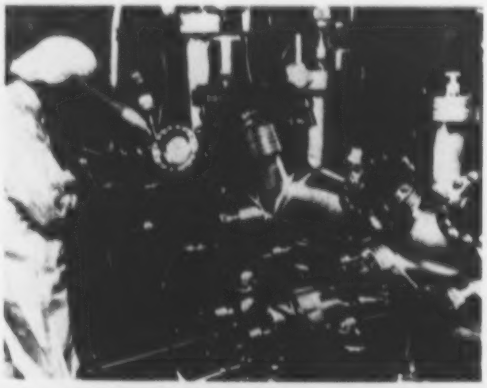
Economic Needs. An executive from one of Arizona's top industries complains that his company has installed technology worth more than one million dollars, but he is having great difficulty finding workers who can read the manual of instructions to operate the technology. The technology is standing idle because the workers cannot read the instructions to operate it.

On the basis of a diagnosis of the readability level of the manual the executive was informed that beside his employees there are 34,272,000 adults in America and 1,621,292 adults in Arizona who cannot read his company's manual of instructions.

TABLE 37. A COMPARISON OF EDUCATION REQUIREMENTS FOR NEW JOBS (CREATED 1985-2000) AND EXISTING JOBS (1985) IN ARIZONA AND AMERICA.*

Education Requirement	Percentage New Jobs	Percentage Existing Jobs
4 years of college or more	30	22
1-3 years of college	22	20
4 years of high school	35	40
3 years of high school or less	14	18

* Median years of school for new jobs--13.5 years. Median years of school for existing jobs--12.8 years.



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As a matter of fact it was necessary to inform the executive that there are 34,200,000 individuals in America 18 years and older and 882,517 individuals in Arizona who cannot write an application for a job in his company.

In the past America had its entrepreneurs who were its heroes--the Edward Harrimans, the John D. Rockefellers, the Andrew Carnegies, the J. P. Morgans, and the Henry Fords.

These entrepreneurs took their big ideas to the workplace and automated it so that routine jobs were taken over by human robots--by drones.

Today only a few are engaged in "manufacturing" in the usual sense, doing the work of drones.

Today most workers provide services--for example, putting together packages of hardware, software, financing and maintenance. Companies call this "flexible manufacturing of service goods."

Reports that American workers can no longer compete in manufacturing and must shift to services are only half right.

Today workers can keep wages high only by producing goods with a large component of specialized services --that is, providing services integral to the production and use of specific goods.

Figure 37. Modern Industrial Practice: Flexible Manufacturing of Service Goods.

TABLE 38. THE JOB MARKET IN AMERICA, 1990.*

HELP WANTED	NO VACANCIES
NURSES: The shortage goes on. The American Hospital Association says the "vacancy"rate is over 10 percent. In fact, shortages are rampant in much of the health-care field; the Bureau of Labor Statistics lists nine medical-related occupations for which job demand will rise between 41 percent and 70 percent by 2000.	**PRODUCTION ASSEMBLERS:** A fancy title for the poorly educated, untrained workers who will have trouble finding old-style factory jobs. The Bureau of Labor Statistics forecasts a drop of 220,000 assembly-line and similar jobs by the year 2000.
SKILLED CRAFTSMEN: A recent survey predicts a rising need for plumbers and typesetters by 1993. Spot shortages of electricians should crop up soon. And airline mechanics are already needed.	**DOCTORS:** A glut of surgeons and physicians is likely by 2000, the Institute for the Future says. The supply will climb by 24 percent, but patient demand will rise only 15 percent, the American Medical Association predicts. Could that mean lower fees? Or even house calls?
COMPUTER WIZARDS: We need more nerds. Companies gripe about a dearth of system designers and data-processing-equipment repairers.	**DENTISTS:** The oversupply that has built up since the late 1970s will continue until about 1995, says Arthur Dugoni, dean ofthe University of the Pacific dental school. But declining dental-school enrollment will, as 2000 comes closer, help wipe out the surplus.
SCIENTISTS and ENGINEERS: A task force predicts a shortfall of 560,000 of these workers by 2010. State highway work requires 2 percent to 3 percent more civil engineers a year, but the number of college graduates in the field has declined more than 20 percent since 1985, to fewer than 8,000 a year.	**RAILROAD, AUTO and STEEL WORKERS:** The rail industry already slashed its work force by 46 percent, to 259,000, between 1980 and 1988, and the Bureau of Labor Statistics forecasts that an additional 50,000 will be trimmed by 2000. Leo Troy, an economics professor at Rutgers University, says that auto and steel workers, too, are in oversupply, and the surplus will get worse, as companies look to cut high-wage workers.
RETAIL WORKERS: Willing and able entry-level employees are hard to find for hotels, supermarkets and department stores. And from fast-food eateries to fancy restaurants, employers are scrambling for cooks, dishwashers and waiters.	**MACHINE WORKERS:** A wide range of skills are fading from the employment picture, blotted out by new technology. Textile workers will be among the hardest hit. The Bureau of Labor Statistics predicts that by 2000 the number of jobs will fall by 97,000 for operators of garment sewing machines and by 154,000 for textile setters and other garment workers.
ENTERTAINERS: The Labor Department certifies about 7,000 immigrant musicians, professional athletes and others each year, to fill U.S. shortages. That, says Thomas Bruening, a Labor Department official, provides one answer to the question "Where are all the new young comedians coming from?"	**DOMESTICS:** The need for live-in or come-in child care and cleaning persons will fall, as households turn more to day-care centers and outside cleaning services. The Bureau of Labor Statistics predicts declines of 11 percent to 15 percent in private-household help by 2000.
LAWYERS and PARALEGALS: It's hard to believe, but they are in short supply--particularly in rural towns, at small firms in large cities, and in specialties such as environment, medicine, old age and space. The Bureau of Labor Statistics ranks paralegals as the fastest-growing occupation, with job demand climbing 75 percent by 2000.	**FARMERS and LOGGERS:** The Bureau of Labor Statistics estimates that an additional 153,000 farm jobs will be gone by the end of the decade. Job demand will fall by 152,000 for logging-related jobs.
SECRETARIES: An existing shortage will probably tighten, especially for medical and legal secretaries, as more women shun the jobs.	

***FOR COMPUTER PROGRAMMERS** or short-order cooks, finding work in the next decade should be easy. But if you happen to be an unskilled factory worker or even a doctor, the task could be tougher. Already, much of the job market is going higher-tech, requiring better-educated and trained workers. At the same time, the supply of workers is shifting: The job market is seeing the arrival of the "baby bust" population and an increasing number of poorly schooled job candidates. The result is a mismatch between job seekers and jobs.

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TABLE 39. SKILL LEVELS NEEDED FOR CERTAIN OCCUPATIONS IN ARIZONA AND AMERICA.*

Occupation	Skill Level Needed Language	 Mathematics
Biochemist	6	6
Computer Applications Engineer	6	6
Mathematician	6	6
Cardiologist	6	5
Social Psychologist	6	5
Lawyer	6	4
Tax Attorney	6	4
Newspaper Editor	6	3
Accountant	5	5
Personnel Manager	5	5
Corporate President	5	5
Weather Forecaster	5	5
Secondary School Teacher	5	4
Disk Jockey	5	3
Elementary School Teacher	5	3
Financial Analyst	4	5
Corporate Vice President	4	5
Computer Sales Representative	4	4
Management Trainee	4	4
Insurance Sales Agent	3	4
Retail Store Manager	3	4
Cement Mason	3	3
Dairy Farm Manager	3	3
Poultry Farmer	3	3
Tile Setter	3	3
Travel Agent	3	3
Directory-Assistance Operator	3	2
Janitor	3	2
Short-Order Cook	3	2
Assembly-LineWorker (Appliances)	2	2
Toll Collector	2	2
Laundry Worker	1	1

* Part I presents definitions of these skill levels.

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TABLE 40. SKILL LEVELS FOR OCCUPATIONS OF THE FUTURE, AS DETERMINED BY THE UNITED STATES DEPARTMENT OF LABOR, 1990.

Skill Level	Percent Existing Jobs	Percent New Jobs	Language Skill Level, Defined	Mathematics Skills Level, Defined
6	1	2	Reads literature, book and play reviews, scientific and technical journals, financial reports and legal documents. Writes novels, plays, editorials, speeches, critiques.	Advanced calculus, modern algebra and statistics.
5	5	11	Same as level 6, but less advanced.	Knows calculus and statistics; econometrics.
4	18	28	Reads novels, poems, newspapers, manuals, thesauri and encyclopedias. Prepares business letters, summaries and reports. Participates in panel discussions and debates. Speaks extemporaneously on a variety of subjects.	Is able to deal with fairly complex algebra and geometry, including linear and quadratic equations, logarithmic functions and deductive axiomatic geometry.
3	35	34	Reads a variety of novels, magazines and encyclopedias, as well as safety rules and equipment instructions. Writes reports and essays with proper format and punctuation. Speaks well before an audience.	Understands basic geometry and algebra. Calculates discount, interest, profit and loss, markup and commissions.
2	31	23	Recognizes meaning of 5,000-6,000 words. Reads at a rate of 190-215 words per minute. Reads adventure stories and comic books, as well as instructions for assembling model cars. Writes compound and complex sentences, with proper end punctuation and using adjectives and adverbs.	Adds, subtracts, multiplies and divides all units of measure. Computes ratio, rate and percent. Draws and interprets bar graphs.
1	9	4	Recognizes meaning of 2,500 (two- or three-syllable) words. Reads at rate of 95-120 words per minute. Writes and speaks simple sentences.	Adds and subtracts two-digit numbers. Does simple calculations with money and with basic units of volume, length and weight.

Occupations of the future will require higher skill levels, based on the Labor Department's breakdown of the skills needed by workers to perform a wide range of jobs. In 1984, for instance, 6 percent of jobs required workers with the two highest skill levels; for jobs to be created between 1984 and 2000, that figure will rise to 13 percent.

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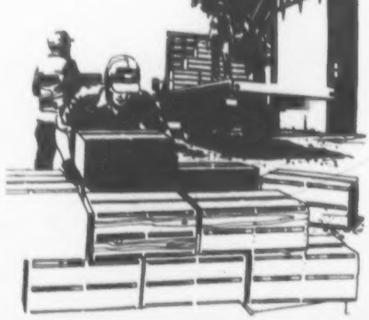


Figure 38. Higher Order Skills: Transforming Ideas into Incrementally Better Products.

The older industrial economies have had two options: (1) They could try to match the wages for which workers elsewhere were willing to labor; (2) They could compete on the basis of how quickly and well they could transform ideas into incrementally better products. They chose the second option.

To compete on the basis of rapid improvements in product and process, rather than on the basis of the scale economies of standardized mass production, means a new emphasis on the innovative skills of workers--the productive services they deliver.

There are no sharp distinctions between goods and services, between invention and production, between entrepreneurs and drones. Production is a continuous process of reinvention. Entrepreneurial efforts must be focused on many thousands of small ideas rather than on a few big ones.

Workers who design software, make hardware, or sell and service the resulting product are the ones who have the valuable, up-to-the-minute information about how things can be improved.

Top management does not solve problems; it creates an environment in which workers can identify and solve problems.

In this very different world of work, literacy of the workers is a key factor. Automation poses no threat to employment for a literate worker.

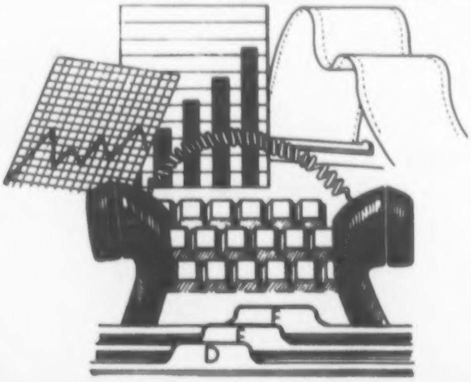


Figure 39. The Marketplace of Ideas: Higher Order Thinking Skills.

Computers are less used to reduce the cost of labor than to enhance its value.

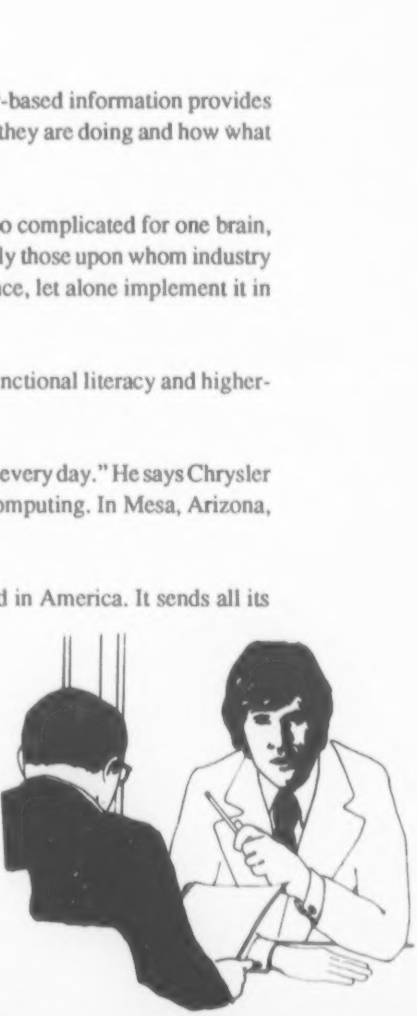
Rather than simplify and standardize jobs by programming every task, computer-based information provides a means of expanding workers' discretion. It gives workers feedback about what they are doing and how what they do affects other aspects of the production process.

Today collective entrepreneurialism is in. Modern science and technology are too complicated for one brain, even of a genius.This process is called antidisestablishmentarianism. Unfortunately those upon whom industry must depend to implement the process cannot spell the word or use it in a sentence, let alone implement it in the workplace.

The important thing to remember in all of this is that the premium qualities are functional literacy and higher-order thinking skills.

Lee Iacocca, Chairman of the Chrysler Corporation, says, "I'm getting more scared every day." He says Chrysler spends 117 million dollars a year teaching its employees reading, writing, and computing. In Mesa, Arizona, Motorola will pay 1.1 million dollars to provide teachers for Motorola classes.

New York Life Insurance Company has given up on having its claims processed in America. It sends all its claims to Ireland for processing.



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IBM turns down 1,700 applicants a month because they do not have the basic skills to do the work at hand.

Of the 36,000,000 young adults (ages 15 to 24) in America, 34,272,000 do not possess "higher order" intellectual skills appropriate for their age: Forty percent cannot draw inferences from written material. Only 20 percent can write a persuasive essay and only 33 percent can solve a mathematical problem requiring several steps.

Of the 891,432 adults (ages 15 to 29) in Arizona, 882,517 cannot search for, locate, and organize information they find in relatively lengthy passages and cannot recognize and create paraphrases and meaning of what they have read, interrelate ideas, and make generalizations.

The main problem is that students are not learning the competencies inherent in functional literacy and higher-order thinking.

This is evident in the percentile rankings of young adults on the Literacy Scales of Assessment of Educational Progress. The percentiles are as follows:

Tenth percentile for high school dropouts; 23rd percentile for high school graduates; and 61st percentile for college graduates. America cannot survive with such a dismal record.

Figure 40. Computers: Less to Reduce the Cost of Labor, More to Enhance the Value of Labor.

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Adult Education--Learning Unlimited, Third Edition, presents the criteria for various levels of proficiency in reading, writing, computing, science, history, and civics. It also identifies skill levels (competencies) for present and future occupations and lifestyles.

Teachers must know what these skills and criteria are and, quite importantly, they must know how to teach them.

The Pursuit of Goals. In a world of ever-accelerating socio-economic change and ever-expanding cultural opportunities, education must focus on the goal of creating a Learning Society. At the heart of such a society is the commitment to a set of values and to a system of education that affords all members the opportunity to learn at their highest potential, from early childhood through adulthood, learning increasingly more day by day as the world itself changes. Such a society has as a basic foundation the idea that education is important not only because of what it contributes to one's career goals but also because of the value it adds to the general quality of one's life.

That Arizona Adult Education programs are making a contribution toward pursuing the socio-economic goals of their students in these terms is made evident in the following tables:

TABLE 41. ACHIEVEMENT AND PROGRESS IN THE PURSUIT OF OCCUPATIONAL GOALS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Number of Students	Occupational Goals*	Achieved	Improved: In Progress
9,162	To get a job.	1,191	7,971
12,607	To get a better job or salary increase.	1,780	10,827
3,818	To enter job training	592	3,226

* There were 4,864 individuals--housewives, retirees, students--who did not have current occupational goals; there were 191 individuals who developed occupational goals while pursuing their adult education programs.

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TABLE 42. ACHIEVEMENT AND PROGRESS IN THE PURSUIT OF CERTAIN EDUCATIONAL GOALS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Number of Students	Educational Goal	Achieved	Improved: In Progress
	Adult Basic Education (ABE)		
1,317	ABE I, Level 1 to 4. To get basic Reading, Writing, Computing skills.	349	968
5,273	ABE II, Level 5 to 8. To improve skills and to continue education.	2,887	2,386
	General Educational Development (GED) Preparation		
2,217	To improve Reading, Writing, Computing skills.	1,337	880
3,986	To take the GED test.	1,835	2,151
625	To improve skills to continue education--college, vocational.	486	139
	English as a Second Language		
10,267	Basic--To learn English language skills.	3,564	6,703
6,127	Advanced--To improve English language skills.	4,514	1,613
1,062	Advanced--To improve skills to continue education--GED, college, vocational.	943	119
	Citizenship		
1,062	To prepare for the United States citizenship examination.	366	467

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TABLE 43. ACHIEVEMENT IN THE PURSUIT OF PERSONAL GOALS IN ARIZONA ADULT EDUCATION PROGRAMS, 1988 TO 1989.

Number of Students *	Personal Goals	Achieved
1,665	To become involved in children's education.	1,665
29,441	To gain self-improvement.	29,441
1,603	To learn about community services.	1,603
1,775	To learn about life skills--health, government, consumerism, problem solving.	1,775
3,182	To be a better citizen.	3,182

* The total exceeds 100 percent of the total enrollment because some students had more than one personal goal.

On the basis of all the "challenges" and "responses" to those challenges that are presented in *Adult Education—Learning Unlimited*, Third Edition, certain recommendations are in order:

- Teachers should participate in staff development workshops to learn the competencies involved in functional literacy--higher-order thinking.
- Teachers should participate in staff development workshops to learn andragogy, not pedagogy--to learn how to teach, rather than to train adults. Training is what drove students out of the schools in the first place when they were children. The paradigm for teaching is simple but profound--(1) Diagnosis, (2) Implementation, (3) Assessment. The proof is in qualitative reading, writing, speaking, in lieu of quantitative-type testing.
- All teachers, regardless of their subject specializations, should teach effective intelligence--teach students how to learn and how to think. The paradigm for effective intelligence is also simple but profound--If A, then B, under conditions C.
- All teachers, regardless of their subject specializations--Civics, History, Geography, Mathematics, Linguistics--should teach functional literacy for it is in all the disciplines that higher-order thinking is necessary. Subject matter specialists cannot leave the teaching of literacy to English teachers.
- All teachers, administrators, legislators, lay persons should increase their level of effort for adult education.

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Figure 41. Staff Development: Workshops for Professional Growth.

The U.S. Office of Education has devised a formula to determine "level of effort" by the states--"Level of Effort" equals "Level of Enrollment" minus "Attrition," divided by the "State's Illiteracy Population."

According to this formula, the Level of Effort of the State of Arizona is five percent.

In these terms Arizona would have to raise its level of effort by 95 percent to meet the needs of its undereducated population.

The levels of effort among the various states range from 2.5 percent (in Pennsylvania) to 25.8 percent (in Hawaii).

Over half the states in our nation are at or below the 5 percent level of effort. Six states (Alaska, Florida, Hawaii, Iowa, and Idaho, and Washington, D.C.) serve 10 percent or more of their undereducated adult population.

In summary, then, the level of effort index points to the magnitude of the task that adult educators in Arizona, as well as America, face in the days that lie ahead.

LEADERSHIP
The Link That Unleashes Greatness

Imperatives. The Project on Adult Literacy of the Southport Institute for Policy Analysis emphasizes that the federal government for the last 25 years has funded programs designed to assist the state and local communities in reducing numbers of adults whose level of basic skills is so minimal that they are only partially functional in the workplace and the community. As well-meaning as the administrators of these programs have been, and as hard as federal, state, and local officials have tried, the federal initiative in adult literacy has been minimal, inefficient, and ineffective. There are a variety of reasons for the notable lack of success in the area of literacy enhancement at the federal level:

- Congressional and administrative interest in the issue has been minimal as reflected by the fact that only 40 percent of authorized funds have actually been appropriated.
- There is no consistent federal policy which has guided the growth of programs since 1965.
- Although there has been a growth of programs outside the original Adult Education Act, there has been no consistency in targeting groups to be served, in developing purposes of programs, and in placing programs.
- There has been no mechanism for coordination among the programs.
- The basic federal vehicle for addressing adult literacy is badly flawed because at the federal level it makes no provisions for (a) systematic data collection and reporting, (b) research and development, (c) teacher education, (d) professionalization of the field, (e) materials development, and (f) dissemination and network development for state and local accountability.

Figure 42. Research: The Diligent and Systematic Inquiry into a Subject in Order to Discover or Revise Facts, Theories, Applications.

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- The placement of the basic program for overall adult literacy education within an agency dedicated to serving children and youth has resulted in minimal attention to the needs of adults.

There are now new imperatives for solving the nation's adult literacy problem. Because of the magnitude of changes in state, national, and international economics during the last decade, adult literacy might well become a matter of cultural-economic-political survival. Where illiteracy used to affect only the individual nonliterate adult, it now affects everyone. Where it formerly resulted in reduced earning power for the individual, it now results in reduced socio-economic stability for business, the state, and the nation.

Figure 43. Adult Literacy: A Matter of Cultural-Economic-Political Survival.

Sources for Adult Education -- Learning Unlimited. *Adult Basic Education Students: Descriptive Profiles on Motivations, Cognitive Ability, and Sociodemographic Variables*, by Rutgers University and Syracuse University. The Adult Education Resource Center. *Adult Education Summary, FY1987-88, ADED40-1, Combined, State of Arizona*, Arizona Department of Education. *Adult Functional Competency: Performance Requirements*, by The University of Texas. *The Adult Learner: A Neglected Species*, by Malcolm Knowles. *Adult Literacy in the United States*, by Carman St. John Hunter and David Harman. American Association for Adult and Continuing Education. American Council on Education. American Demographics. American Educational Research Association. American Library Association. The American Society for Training and Development. Arizona Educational Information System. Arizona *Republic*. Arizona School Board Association. *The Art of Plain Talk*, by Rudolf Flesch. Association for Supervision and Curriculum Development.

Basic Skills in the U.S. Workforce, by The Center for Human Resources. *The Boundless Resource: A Prospectus for an Education-Work Policy.* Bureau of Labor Statistics.

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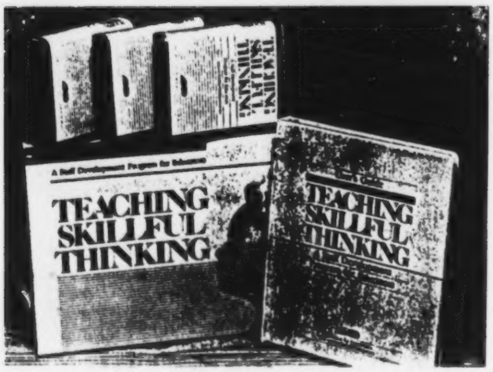

Figure 44. Historical Perspective: Books Are Our Most Accessible Routes to the Carefully Structured Thoughts of People throughout the Ages.

Carnegie Forum on Education and the Economy. Committee for Economic Development. *Comprehensive Assessment Program: Assessment of Writing*, by American Testronics. Contact Center, Inc. *Cornell Critical Thinking*, by R. H. Ennis and Jason Millman.

Developing Cognitive Abilities, by American Testronics.

Experience through Literature, by James John Jelinek.

Ford Foundation Project on Social Welfare and the American Future. *The Forgotten Half: Pathways to Success for America's Youth and Young Families. Foundation Statement for the Language Arts Essential Skills*, by Arizona Department of Education. *The Fourth R, Workplace Readiness.*

How to Test Readability, by Rudolf Flesch. Hudson Institute.

Illiteracy: A National Dilemma, by David Harman. *Improving the Human Condition*, by James John Jelinek. Internal Revenue Service. International Association for the Evaluation of Educational Achievement. *Iowa Adult Basic Education Target Population Study*, by Jane B. Sellen.

Key Words to Reading: The Language Experience Approach, by Jeanette Veatch, et. al.

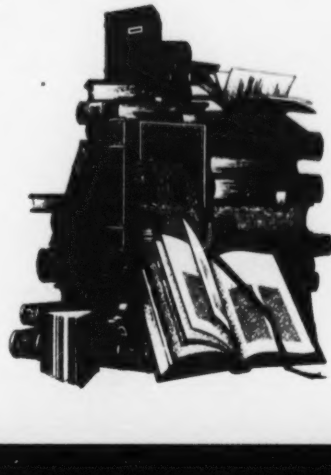

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Figure 45. From Our Parents We Learn Love and Laughter and How to Put One Foot in Front of the Other. But When Books Are Opened We Discover We Have Wings.

Language Arts: Essential Skills, by Arizona Department of Education. *Learning to be Literate: Reading, Writing, and Reasoning*, by National Assessment of Education. *Library Programs: Meeting the Literacy Challenge*, by U.S. Department of Education, Office of Educational Research and Improvement. *Literacy: Profiles of America's Young Adults*, by National Assessment of Educational Progress. Los Angeles *Times*.

Meeting the Challenge of a Nation at Risk, by The National Commission on Excellence in Education. *Meeting the Challenge: Recent Efforts to Improve Education Across the Nation*, by The National Commission on Excellence in Education. Morrison Institute for Public Policy, Arizona State University.

A Nation at Risk, by the National Commission on Excellence in Education. National Alliance of Business. *National Assessment Planning Project*, Council of Chief State School Officers. National Assessment for Educational Progress. The National Center for Research in Vocational Education. National Center on Education and Employment. The National Manpower Institute. *The Nation's Report Card: Improving Assessment of Student Achievement*, by Committee of National Academy of Education and The National Study Group on Improving Assessment of Student Achievement.

Occupational Adaptability: Perspective on Tomorrow's Careers. Office of Educational Research and Improvement, U.S. Department of Labor. Office of Educational Research and Improvement, U.S. Office of Education.

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PLATO, by Novanet. *Pedagogy of the Oppressed*, by Paulo Freire. Phi Delta Kappa. Phoenix *Gazette*. Phoenix South Community Mental Health Center. *A Preface to Literacy: An Inquiry into Pedagogy, Practice, and Progress*, by Myron C. Tuman. *Profiles of Adult Learners*, by Joan Seamon. *Project Literacy U.S. (PLUS): Impact of the First Year's Task Forces*, by the Cosmos Corporation. *Projections 2000*, by Bureau of Labor Statistics, U.S. Department of Labor. *The Psychology of Literacy*, by Sylvia Scribner and Michael Cole.

Reading and Writing Assessment: West Virginia, by National Assessment of Educational Progress. *The Reading Report Card*, by National Assessment of Educational Progress. *Reading, Thinking, and Writing: Results from the 1979-1980 National Assessment of Reading and Literature*, by National Assessment of Educational Progress.

The Science Report Card, by National Assessment of Educational Progresss. Southport Institute for Policy Analysis. State Education Performance Chart. *Statistical Abstract of the United States: National Data Book and Guide to Sources.*

Teacher Residence Program Instrument, by Center for Educational Development. *Teaching Evaluation*, by American Association of School Administrators. *Teaching Writing to Adults*, by State University of New York, Albany. *Tests, Products, and Services for Education*, by the Psychological Corporation. *Toward a More Perfect Union: Basic Skills, Poor Families, and Our Economic Future*, by the Ford Foundation Project on Social Welfare and the American Future.

Figure 46. The Images of Man's Wits and Knowledges Remain in Books, Exempted from the Wrong of Time, and Capable of Perpetual Renovation and Reconstruction.

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United States Department of Commerce.

Who Reads Best? by National Assessment of Educational Progress. *Why Johnny Can't Read,* by Rudolf Flesch. The William T. Grant Commission on Work, Family, and Citizenship. *Workforce 2000: Work and Workers for the 21st Century,* by William B. Johnston and Arnold E. Packer. *Workplace Basics: The Skills Employers Want. Workplace Competencies: Improving Literacy and Employment Readiness. The Writing Report Card,* by National Assessment of Educational Progress. *Writing to Read,* by John Henry Martin and Ardy Friedberg. *Writing: Trends Across the Decade, 1974-1984,* by National Assessment of Educational Progress.

Youth Indicators 1988: Trends in the Well-Being of American Youth, by the Office of Educational Research and Improvement, U.S. Department of Education.

Figure 47. Growth Begets More Growth: Books Give Not Wisdom Where None Was Before, but Where Some Is, There Reading Makes It More.

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APPENDICES

APPENDIX A

ARIZONA DEPARTMENT OF EDUCATION
ADULT EDUCATION DIVISION

PROJECT DIRECTORS' LIST FY1989-90

ST. JOHNS (Apache County)
Apache County School Superintendent
St. Johns, AZ 85936
Director: Ms. Ernestine K. Stitt
Phone: 337-4364, Ext. 212

TSAILE (Apache County)
Navajo Community College
Tsaile Campus
P.O. Box 704
Tsaile, AZ 86556
Director: Mr. Kalvin White
Phone: 871-2230

BISBEE (Cochise County)
Bisbee Unified District No. 2
P.O. Drawer G
Bisbee, AZ 85603
Director:
Phone: 432-5381
Coord: Leonard Suarez

DOUGLAS (Cochise County)
Cochise College
Douglas, AZ 85607
Director: Mr. Bill Delvecchio
Phone: 364-7943

DOUGLAS (Cochise County)
Douglas Unified District No. 27
P.O. Box 1237
Douglas, AZ 85607
Director: Mr. Jim Huddleston
Phone: 364-2822

SIERRA VISTA (Cochise County)
Sierra Vista Unified District No. 68
3555 Fry Boulevard N.E.
Sierra Vista, AZ 85635
Director: Dr. Raymond Galvin
Phone: 458-4391, Ext. 311

FLAGSTAFF (Coconino County)
Flagstaff Community Schools
Administrative Center
3285 East Sparrow
Flagstaff, AZ 86004
Director: Mr. Walley Quayle
Phone: 527-6190 or 527-6191

PAGE (Coconino County)
Page Unified District No. 8
P.O. Box 1927
Page, AZ 86040
Director: Mr. Steven Childs
Phone: 645-8801, Ext. 127

WILLIAMS (Coconino County)
Williams High School
440 South Seventh Street
Williams, AZ 86046
Director: Ms. Barbara Kleindienst
Phone: 635-4474

GLOBE (Gila County)
Eastern Arizona College
Gila-Pueblo Campus
Six Shooter Canyon
P.O. Box 2820
Globe, AZ 85552
Director: Ms. Margo Bracamonte
Phone: 425-3151

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MIAMI (Gila County)
Gila Literacy Program, Inc.
Miami Memorial Library
1052 Adonis
Miami, AZ 85539
Director: Lynn Carey
Phone: 425-0229

PAYSON (Gila County)
Tonto Apache Tribe
No. 30 Tonto Apache Reservation
Payson, AZ 85541
Director: Ms. Louise Lopez
Phone: 474-5000

THATCHER (Graham County)
Eastern Arizona College
600 Church Street
Thatcher, AZ 85552
Director: Dr. Ron Keith
Phone: 428-1133
Coord: Ms. Holly Pascoe

PARKER (La Paz County)
Parker Unified School District No. 27
P.O. Box 1089
Parker, AZ 85344
Director: Mr. William J. Brennan
Phone: 669-8259

EHRENBERG (La Paz County)
Quartzsite Elementary
P.O. Box 130
Ehrenberg, AZ 85334
Director: Mr. Robert Gallinger
Phone: 923-9617

AGUILA (Maricopa County)
Aguila Elementary
P.O. Box 218
Aguila, AZ 85320
Director: Mr. Jaime C. Vest
Phone: 685-2222

FOUNTAIN HILLS (Maricopa County)
Ft. McDowell Mohave-Apache
Indian Community
P.O. Box 17779
Fountain Hills, AZ 85268
Director: Ms. Roberta Salazar
Phone: 837-8560, 990-0995

PHOENIX (Maricopa County)
Literacy Vol. of Maricopa
61 East Columbus, Suite 101
Phoenix, AZ 85012
Director: Ms. Gaye Tolman
Phone: 274-3430

GLENDALE (Maricopa County)
Glendale School District No. 40
Gary Tang Adult Education Center
5734 West Glendale
Glendale, AZ 85301
Director: Ms. Mona Conover
Phone: 842-8164

MESA (Maricopa County)
Mesa Unified School District No. 4
549 North Stapley Drive
Mesa, AZ 85203
Director: Mr. Jesus Cardona
Phone: 898-7888

PHOENIX (Maricopa County)
Phoenix Union High School
Adult Basic Education
1900 West Thomas
Phoenix, AZ 85015
Coord: Mr. George Crenshaw
Phone: 271-2900
Facilitators: Ms. Wilda Theobald,
Mr. Larry Ockenfels
Phone: 271-3280 or 3279

TEMPE (Maricopa County)
Tempe Union High School Dist. No. 213
500 West Guadalupe Road
Tempe, AZ 85283
Director: Ms. Jean Paisley
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PHOENIX (Maricopa County)
Project Arts, Inc.
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815 North Central
Phoenix, AZ 85004
Director: Donna Douglas
Phone: 271-4404

PHOENIX (Maricopa County)
Rio Salado Community College
640 North First Avenue
Phoenix, AZ 85003
(Includes: Avondale, Buckeye, Dysart, Paradise Valley, Peoria, Tolleson, Wilson, Scottsdale, Chandler, Glendale Community College)
Director: Ms. Karen Mills
Phone: 223-4280

LAKE HAVASU (Mohave County)
Lake Havasu Area Literacy Council
2196 Quail Lane
Lake Havasu, AZ 86403
Director: Ms. Anna Sutton
Phone: 855-3535

KINGMAN (Mohave County)
Mohave Community College
1971 Jagerson Avenue
Kingman, AZ 86401
Director: Mr. John Wilson
Phone: 757-4331

WHITERIVER (Navajo County)
White Mountain Apache Tribe
P.O. Box 999, Education Dept.
Whiteriver, AZ 85941
Director: Mr. Wesley Bonito
Phone: 338-4490

TUCSON (Pima County)
Pima County Adult Education
130 West Congress
Tucson, AZ 85701
Director: Mr. Greg Hart
Phone: 740-8695

TUCSON (Pima County)
TALC/Pima County AE
131 West Congress
Tucson, AZ 85701
Director: Mr. Greg Hart
Phone: 740-8695

CASA GRANDE (Pinal County)
Casa Grande Elementary Dist. No. 4
1460 North Pinal Avenue
Casa Grande, AZ 85222
Director: Mr. Allen R. Church
Phone: 836-2111

SAN MANUEL (Pinal County)
Mammoth/San Manuel Unified
District No. 8
P.O. Box 406
San Manuel, AZ 85631
Director: Mr. Joel Morris
Phone: 385-2335

SUPERIOR (Pinal County)
Superior Unified District No. 15
199 Lobb Avenue
Superior, AZ 85273
Director: Mr. Russell Hoffman
Phone: 689-5291

NOGALES (Santa Cruz County)
Nogales Unified School District No. 1
222 Plum Street
Nogales, AZ 85621
Director: Mr. Frank Thompson
Phone: 281-2300

PRESCOTT (Yavapai County)
Yavapai College
1100 East Sheldon
Prescott, AZ 86301
Director: Dr. Merrill Glustrom
Phone: 445-7300, Ext. 2292
Also: 776-2291

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CHINO VALLEY (Yavapai County)
Chino Valley Literacy Program
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Chino Valley, AZ 86323
Director: Mr. Francis Blake
Phone: 636-5567

CLARKDALE (Yavapai County)
Verde Valley Literacy Program
P.O. Box 865
Clarkdale, AZ 86324
Director: Ms. Mary Nichol
Phone: 634-0013

YUMA (Yuma County)
Yuma Elementary District No. 1
450 Sixth Street
Yuma, AZ 85364
Director: Mr. Manuel M. Rodriguez
Phone: 783-2193

SOMERTON (Yuma County)
Chicanos Por La Causa
336 South Main Street
P.O. Box 517
Somerton, AZ 85350
Director: Ms. Patricia Garcia
Phone: 627-2042

YUMA (Yuma County)
Yuma County Library
350 Third Avenue
Yuma, AZ 85364
Director: Ms. Anna Martin
Phone: 782-1871 or 343-9363

APPENDIX B

ARIZONA DEPARTMENT OF EDUCATION
ADULT EDUCATION DIVISION

GENERAL EDUCATIONAL DEVELOPMENT (GED)
APPROVED TESTING CENTERS

AJO (Pima County)
Ajo High School
P.O. Box 68
Ajo, AZ 85321
Mr. Lorenzo Morales
Phone: 387-7601

APACHE JUNCTION (Pinal County)
Central Arizona College--Apache Junction
273 East U.S. Highway 60, Room A2
Apache Junction, AZ 85219
Mr. George Colbert
Phone: 982-7261

BISBEE (Cochise County)
Bisbee Community School
Drawer G
Bisbee, AZ 85603
Ms. Rachel T. Acuna
Phone: 432-5381

BUCKEYE (Maricopa County)
Buckeye Union High School
902 Eason Avenue
Buckeye, AZ 85326
Mr. Jack McCormick
Phone: 386-4423

CHANDLER (Maricopa County)
Chandler High School
350 North Arizona Avenue
Chandler, AZ 85224
Mr. Robert Caccamo
Phone: 786-7140

CHINLE (Apache County)
Rough Rock Community School
Box 217 RRDS
Chinle, AZ 86503
Ms. Clara Randall
Phone: 728-3311, Ext. 251

CLARKDALE (Yavapai County)
Yavapai College--Verde Campus
Clarkdale, AZ 86324
Ms. Patricia Onion
Phone: 634-7501

CLIFTON (Greenlee County)
Greenlee County School Office
P.O. Box 1595
Clifton, AZ 85533
Mr. Thomas Wright
Phone: 865-2822

COOLIDGE (Pinal County)
Central Arizona College--Signal Peak Campus
8470 North Overfield Road
Coolidge, AZ 85228
Ms. Arlene Jorgensen
Phone: 723-4141, Ext. 4411 or 426-4411

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Northern Arizona University
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Flagstaff, AZ 86011
Mr. James Fredrick
Phone: 523-2261

FORT DEFIANCE (Apache County)
Window Rock High School
P.O. Box 559
Fort Defiance, AZ 86504
Mr. Allen Begay
Phone: 729-5705, Ext. 405

FORT GRANT (Graham County)
Correctional Facility
Eastern Arizona College
Fort Grant, AZ 85643
Mr. John Arbuthnot
Phone: 828-3367

GLENDALE (LAFB) (Maricopa County)
Glendale Community College
6000 West Olive
Glendale, AZ 85302
Mr. Ray Simpson
Phone: 435-2211 or 435-3058

GLENDALE (Maricopa County)
Glendale Community College
6000 West Olive
Glendale, AZ 85302
Mr. Ray Simpson
Phone: 435-3134 or 435-3058

HOLBROOK (Navajo County)
Northland Pioneer College
P.O. Box 610
Holbrook, AZ 86025
Ms. Mary Ross Bennett
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GLOBE (Gila County)
Globe Unified School District
501 Ash Street
Globe, AZ 85501
Mr. Carlos Salas
Phone: 425-3211

KINGMAN (Mohave County)
Kingman High School
4455 North Van Nuys
Kingman, AZ 86401
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LAKE HAVASU (Mohave County)
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Mesa, AZ 85202
Ms. Betty Mills
Phone: 461-7481 or 7482

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Nogales, AZ 85621
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PAYSON (Gila County)
Payson High School
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PHOENIX (Maricopa County)
GateWay College
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Phoenix, AZ 85034
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Phone: 392-5199

PHOENIX (Maricopa County)
Maricopa County Skill Center
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Ms. Yvonne Trivette
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PHOENIX (Maricopa County)
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Phoenix, AZ 85013
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PHOENIX (Maricopa County)
Phoenix Union High School District
4502 North Central Avenue
Phoenix, AZ 85017
Ms. Jean Anderson
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PHOENIX (Maricopa County)
South Mountain Community College
7050 South 24th Street
Phoenix, AZ 85040
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Yavapai College
1100 East Sheldon
Prescott, AZ 86301
Mr. W. G. Gipe
Phone: 776-2200

RIVIERA (Mohave County)
Mohave Community College
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Bullhead City, AZ 86442
Ms. Barbara Wetherill
Phone: 758-3926

SACATON (Pinal County)
Gila River Career Center
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Sacaton, AZ 85247
Ms. Lupe Gastelum
Phone: 723-5522

ST. DAVID (Cochise County)
St. David High School
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St. David, AZ 85630
Mr. Jim Crawford
Phone: 720-4781

SELLS (Pima County)
Indian Oasis School District
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Sells, AZ 85634
Mr. Michael J. Ryan
Phone: 383-2601

SIERRA VISTA (Cochise County)
Cochise College
Sierra Vista Campus
901 North Colombo
Sierra Vista, AZ 85635
Mr. Richard Seals
Phone: 458-7110, Ext. 712

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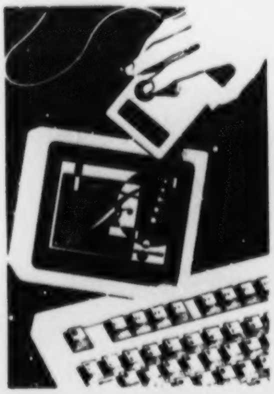

SUPERIOR (Pinal County)
Kennedy Elementary
1500 South Sunset Drive
Superior, AZ 85273
Ms. Betty Mashaw
Phone: 689-5841

THATCHER (Graham County)
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Thatcher, AZ 85552
Mr. Jim Gorman
Phone: 428-1133, Ext. 491

TSAILE (Apache County)
Navajo Community College
Tsaile, AZ 86556
Mr. Edison Curtis
Phone: 724-3311

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Tuba City Junior High School
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Tuba City, AZ 86045
Ms. Harriett Sloan
Phone: 283-4211, Ext. 42

TUCSON (Pima County)
Eastside Adult Learning Center
3833 East Second Street, Suite 105
Tucson, AZ 85716
Ms. Mary Grace Wendel
Phone: 881-3566

TUCSON (Pima County)
El Pueblo Neighborhood Center
101 West Irvington Road, Room D2
Tucson, AZ 85714-3099
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PLATE A. ARIZONA ADULT EDUCATION IN HISTORICAL PERSPECTIVE.

Fiscal Years	Adult Students	GED Examinees	Federal Funds Expended	State Funds Expended
1964-66	3,294	8,664	$398,271.00	$51,463.00
1966-67	3,263	3,881	205,257.00	37,317.00
1967-68	3,928	5,702	282,992.00	38,369.00
1968-69	3,028	6,142	336,783.00	53,690.00
1969-70	4,033	5,601	346,521.00	53,521.00
1970-71	4,546	6,285	383,326.00	57,008.00
1971-72	5,889	5,577	432,764.00	71,972.00
1972-73	5,179	6,312	317,456.00	180,342.00
1973-74	6,063	11,218	457,627.68	240,814.04
1974-75	8,922	9,191	523,120.00	308,188.00
1975-76	8,922	9,620	490,323.42	317,261.34
1976-77	9,447	10,346	563,007.00	331,878.41
1977-78	9,983	9,134	570,201.19	384,144.29
1978-79	12,208	11,298	743,293.96	395,362.81
1979-80	13,318	11,316	791,146.09	397,011.57
1980-81	14,674	11,488	770,059.56	477,220.07
1981-82	14,770	10,414	755,278.54	479,524.64
1982-83	13,971	10,017	673,930.50	435,485.03
1983-84	15,836	8,808	864,703.88	472,525.65
1984-85	18,694	9,521	1,007,317.49	495,358.10
1985-86	21,541	10,870	997,746.00*	966,901.00
1986-87	25,330	10,724	995,857.00	1,037,672.00
1987-88	27,122	12,440	1,077,025.00	1,211,098.00
1988-89	32,765	9,782	1,284,632.00#	1,173,030.00
1989-90 +	35,587	11,161	1,337,000.00	3,050,000.00
Total**	322,313	225,512	$16,605,639.31	$12,717,156.65

*Section 310 is not included.

#Section 353 is included.

+The 1989-1990 program was not complete at the time of this writing. For this reason, the figures used for the 1989-1990 program are projections of numbers of adult students and of expenditures for the full year.

**The "totals" in the columns include the projections made for 1989-1990.

Following are the various appropriations for Arizona Adult Education for the fiscal year 1989-1990:

State Funds	$3,050,000
Federal Act	1,337,000
Section 353	150,000
Homeless	150,000
English Literacy	72,500
Total	$4,759,500

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